THE IRON AGE

THURSDAY JANUARY 19, 1893.

The Telephotos.

C. V. Boughton of the Buffalo, N. Y., Seal & Press Company, has invented a strange device called the telephotos. It is for the purpose of signaling long distances with incandescent light. The invention is an adaptation of electric lights to the Morse alphabet. There is first a long horizontal box in which are ranged in a single row 106 incandescent lamps. The narrow box is open on one side, and each lamp when lighted appears as a bright bull's eye in the system of lights. There is then a keyboard that contains the alphabet, the numerals, the character "&" and the period. By pressing a button the lights flash in dots and dashes, easily read by an operator. Should the observer not be an operator the letters are written slowly enough to allow him to copy them, and transcribe by means of a Morse alphabet. For a dot two lights are used, for a dash or a space there are 10. The letter "l," therefore, which is a single dash, is made up of 10 lights, which at a distance appear to be continuous. The letter "n" takes 15 lights, and the cipher 20. There are the three dash characters, distinguished only by their varying lengths. On this plan the period would require 144 lights, but two red lights have been substituted in order to save space. By a simple device the position of the keyboard is shifted so that in pressing a key, not the letter which ordinarily responds to that key, but a letter one or more intervals further down the alphabet, appears. This is to aid in sending cipher dispatches. The invention is intended primarily for marine signaling, and is good for many miles in ordinary weather. The line of lights is to be run up the mast. From the roof of a building at Buffalo signals have been read 10 miles distant. This was done without lenses to throw the rays of light forward horizontally, which would greatly increase their power. The invention has been patented in eight countries, and a perfected specimen will be exhibited on board the warship "Chicago," which will be at the World's Fair. Besides naval telegraphy, the telephotos is adaptable to the signaling necessary in the coast survey, where triangulation on land is employed, and to army signaling. A small model of a wagon to be used in the army has been made. The lights can be easily read four miles in the daytime.

The Coal Storage Plant at South Plainfield.

[*With Supplement*]

Some years since the question of storing large quantities of coal forced itself upon the attention of railroad companies and other large consumers. This was primarily made necessary by the desire of those companies not coal producers to be in a certain sense practically independent of the market and of strikes in the coal regions, and also to enable them to handle the coal to the best advantage as far as cost of transportation was concerned. The idea has grown rapidly, and we now find that large consumers have provided themselves with plants for the storing of coal, having in some cases capacity sufficient to enable them to tide over a high market, while at the same time deriving all the benefits to be obtained from low prices and also from low freights. Several methods were adopted for accomplishing this, one of the simplest in cost of installation and cost of maintenance and operating ex-

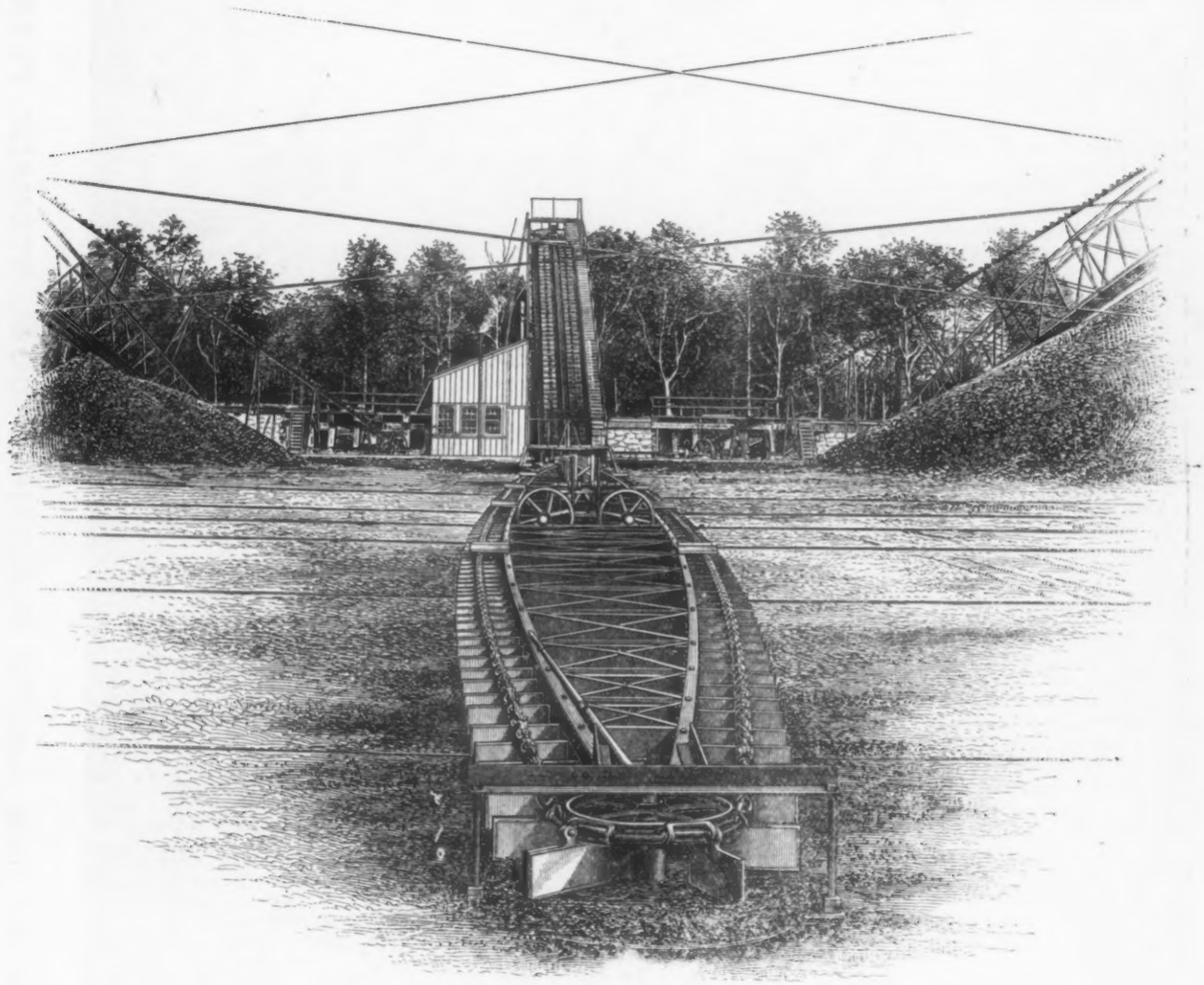


Fig. 2.—The Reloader in Central Position.

THE COAL STORAGE PLANT AT SOUTH PLAINFIELD.

penses being that devised by James M. Dodge, and built by the Dodge Coal Storage Company of Philadelphia. We have the privilege this week of illustrating very completely by drawings and engravings made from photographs the plant erected by this company for the Lehigh Valley Coal Company on the line of the Lehigh Valley Railroad, at South Plainfield, N. J. In this method there is no manual labor whatever required in handling the coal, the only work required of the attendants being to care for the machinery doing the work. The single exception to this is found in the case of certain forms of coal cars which will not completely empty themselves, and on which it therefore becomes necessary to employ men to get the coal out of the corners.

The System in General.

The several cars constituting a coal train are brought one by one over pockets formed in the track and into which their load is dumped. From these pockets endless conveyors take the coal along troughs up one of the trusses placed at the angle of repose of the coal and there deposit it. When necessary an empty train is brought into position with its cars under the shute from a hopper capable of receiving several tons of coal and into which the coal is dumped by means of a reloading endless chain arranged to sweep the base of either one of two adjoining piles of coal. It will thus be seen that the coal is delivered, carried to one of the piles alongside of the track and then reloaded whenever required solely with the aid of machinery.

The general arrangement of this plant is shown in the map, Fig. 5. Extending centrally are five lines of track, provided at each end, but not shown in the drawing, with the necessary switches for shifting from one track to the other. On the north side of the track are six floors, each having a diameter of 256 feet and capable of receiving 30,000 tons of coal each. On the south side of the track are four floors, each having a diameter of 226 feet and a capacity of 20,000 tons. There are also two floors of 204 feet in diameter and 15,000 tons capacity, and two of 180 feet diameter and 10,000 tons capacity. These piles are arranged to be worked in pairs, with independent loading apparatus, but with a common reloading device which takes coal from either pile according to circumstances. But one set of machinery, arranged alongside of the track and equidistant from the piles, as indicated in the map, provides power for both loaders and trimmers, as they are termed, and also for the reloader.

Each floor or pile is spanned by two trusses placed as shown in the piles marked A and D, in Fig. 5. These trusses are built as shown in the engraving on the inset page and in Fig. 3, the angle formed by the two trusses corresponding with the angle of repose of the pile of coal to be deposited beneath them, and the trusses being held in position by guy ropes arranged as shown in the heavy, broken lines on the map and also faintly in the perspective views. The coal deposited in the receptacle beneath the track is taken up the truss by means of an endless chain arrangement and deposited on the pile. Pivoted midway between each pair of piles is the reloading device, which is a double bow girder arranged so as to sweep one pile or the other, one end being pivoted, as shown in the map and in Fig 4 It will be observed that the system works on what is known as the flowing principle, the coal in no case, either in loading or unloading, being permitted to drop more than a few inches at a time. How this is accomplished during the unloading and filling of one of the floors will be explained further on.

Unloading.

Since there are six floors on one side of the track and eight floors on the other side and operating machinery for each pair, there are, as indicated in the map, seven separate and independent plants providing the necessary power. On the track adjoining each power station is a receiving hopper, 25 feet long and 10 feet wide, into which the coal from the cars is dumped. Placed at convenient distances between the tracks, and also operated by the power stations nearest to which they are located, are capstans provided for moving the loaded and empty cars into

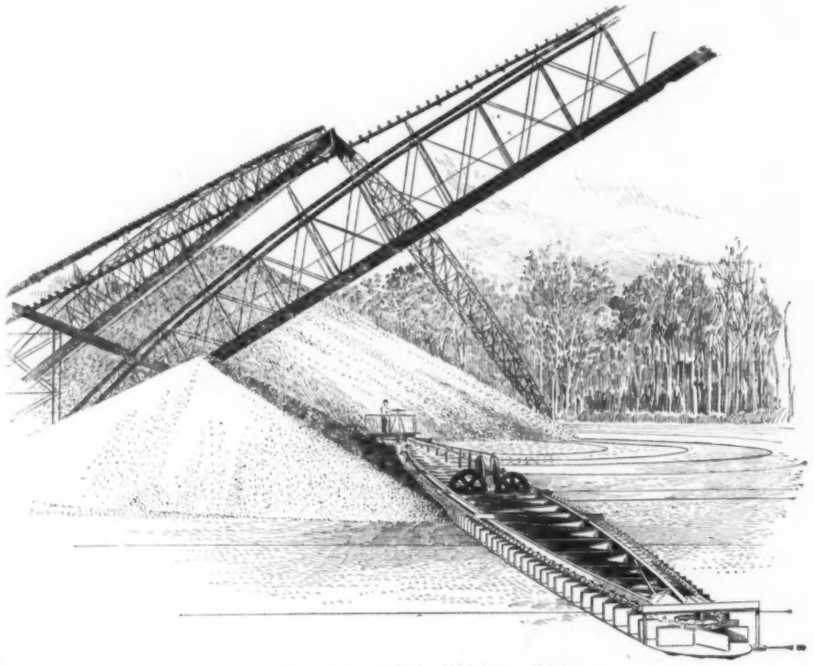


Fig. 3.—The Reloader in Working Position.

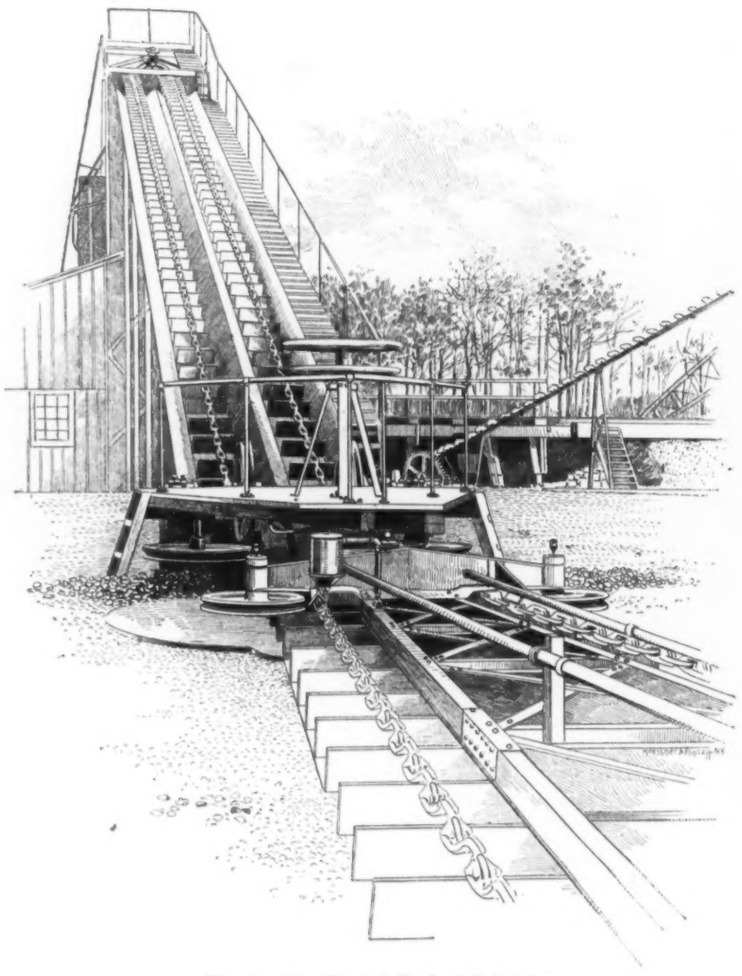


Fig. 4.—The Pivoted End of Reloader.

THE COAL STORAGE PLANT AT SOUTH PLAINFIELD.

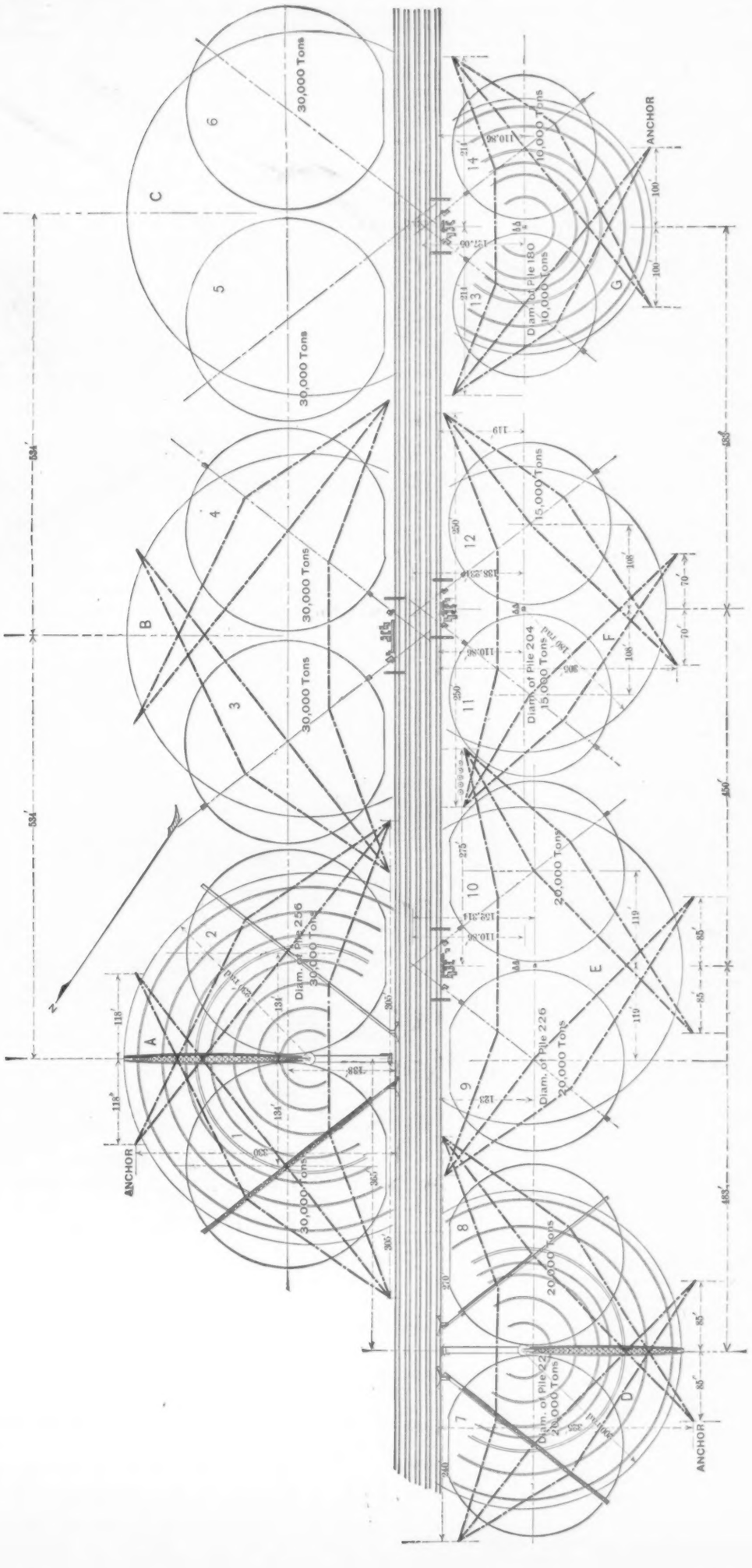


Fig. 5.

MAP OF COAL STORAGE PLANT AT SOUTH PLAINFIELD.

position for unloading and loading. We may add that these capstans are the only part of the machinery which moves continually, all the other devices being arranged so as to stop when not doing any work. The coal dumped into the receiving hopper is taken by the trimmer and conveyed by a trough extending along the straight or bottom chord of one of the trusses, as shown in Fig. 6. There is a slide in the shute leading from the receptacle to the trimmer in order to regulate the flow, this arrangement being possible, as the railroad tracks are placed about 6 feet above the general floor level. At the foot of the truss, as shown in Fig. 6, is a guiding pulley arranged to hold the chain down into the trough. This guide pulley is mounted in a yielding frame, so that in case foreign material or large lumps should be brought along by the conveyor there would be no damage done, as the guide wheel would be lifted and thereby permit the passage of what would otherwise be an obstruction. The trough extending up the shear leg, a cross section of which is shown in Fig. 7, consists of two inclined sides and a movable bottom, the latter being 18 inches wide. This bottom is one of the most important characteristics of the entire outfit, since it permits of the coal being almost laid directly on top of the pile, and of being extended as the pile grows, so that at no time between the beginning and the filling of the pile is the coal permitted to fall more than a few inches. This bottom consists of a steel ribbon, No. 14 gauge, made in lengths, with a depressed lap joint, and at its lower end wound on a four foot drum. To the upper end of the ribbon is attached a $\frac{1}{2}$-inch rope, which passes over a sheave at the top of the truss, and thence back to the operating drum in the power house. By this means the ribbon can be extended up the trough as the pile grows. In the trough thus formed move blades or flights of such form as to fit in the trough. These flights or scrapers measure 8 x 24 inches, and are spaced 16 inches apart or at every second link of what is known as the $\frac{3}{4}$-inch Dodge chain. On the upper side on each side of the chain there are provided wearing shoes to take the wear during the return movement, which is accomplished in a suitable guideway formed over the truss, as shown in the perspective views, this guide being made of two angle irons supported by braces. The speed of this part of the device is 200 feet per minute.

Reloading.

The reloader is shown in Figs. 2, 3, 4, 8 and 9. It consists essentially of a double-bow girder, one end of which is pivoted, as shown in Figs. 4, 8 and 9, midway between each pair of piles and at the foot of an incline leading to the top of the hopper building. This reloader is swung so as to be brought in contact with either of the two piles it is intended to serve by means of two 1-inch wire ropes, which are secured at one end to a set of drums in the power house and then run out over guiding wheels, as shown in Fig. 8, to a distance equal to about one third from the foot or pivoted end of the reloader. They then pass on a circular rail in either direction, and are anchored at the extreme swing of the reloader. It is apparent that by winding up one of these ropes and playing out the other the reloader can be swung in either direction desired.

Passing around the reloader, as shown in Figs. 2 and 3, and up the incline, as shown in Fig. 4, is an endless chain provided with scrapers 8 x 20 inches, and spaced 2 feet apart. Both the rope operating the reloader and the chain are operated from the platform shown in Fig. 4. The reloader is supported at every 30 feet by rails placed concentrically, the pivot upon which the reloader swings being the center of the circle. On each of the rails rest two chilled rollers 10 inches in diameter and 4 inches face, this extreme width of face being designed to overcome any irregularity in the track. At each side of the reloader is a horizontally placed apron extending 19$\frac{1}{2}$ inches beyond the side of the reloader. The flights, being 20 inches in length, reach over this apron and are intended to clear the way. The reloader is shown in operation in Fig. 3. It will be observed that the flights carried by the chain as they pass the foot of the coal pile remove the coal, conveying it to the foot of the incline, up which it passes, as shown in Fig. 4, and is delivered into the hopper, the chain then passing down the other trough of the incline. By means of this arrangement and the provision of two troughs on the incline coal from either pile may be handled. The hopper is shown in side section and elevation in Fig. 9. The shute leading from the hopper is provided with an extension piece, the object of which is to permit the loading of coal into cars standing on either the first or second tracks. The upper part of the shute is furnished with a screen in order to screen the coal passing through. The screenings are conveyed by a shute to the lower part of the building, from whence they can be elevated and delivered into cars and removed.

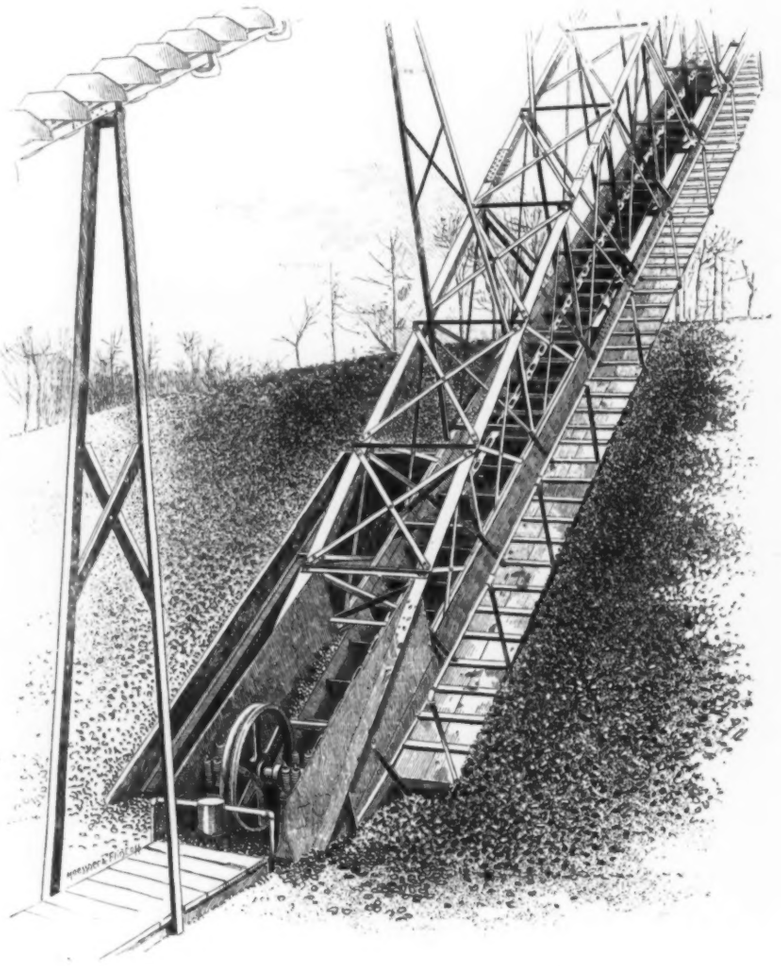


Fig. 6.—View of Lower End of One Truss.

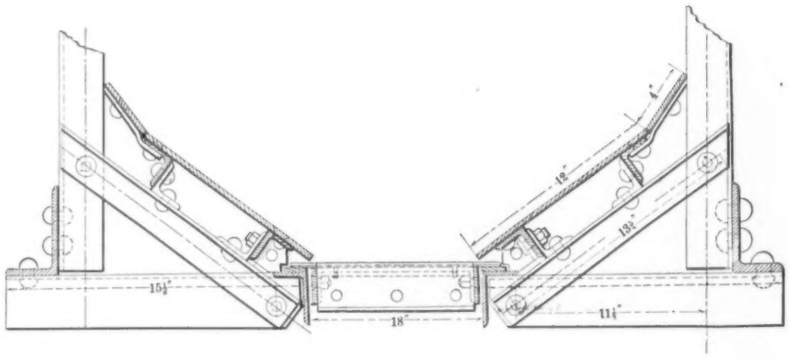


Fig 7.—Cross Section of Trimmer Trough.

THE COAL STORAGE PLANT AT SOUTH PLAINFIELD.

Power.

In each station is provided a suitable engine driving a shaft placed parallel with the railroad tracks and from which all the power necessary for all the operations of

the several devices is obtained. A bevel gear on this shaft, gearing with a similar gear on a shaft extending out under the railroad tracks, provides the power for turning the capstans. The engine is a 100 horse-power Buckeye, 12 x 16, single cylinder, 260 revolutions per minute.

tion coupling permits of the disengaging of either of these gears. Power for operating the reloader is taken from this shaft to a 48 inch sprocket wheel placed on top of the hopper house, as shown in Fig. 4. Between the shaft and this sprocket wheel suitable provision is introduced for reversing the direction of travel of the chain. Drums carrying the wire ropes intended for shifting the reloader are also driven from this shaft.

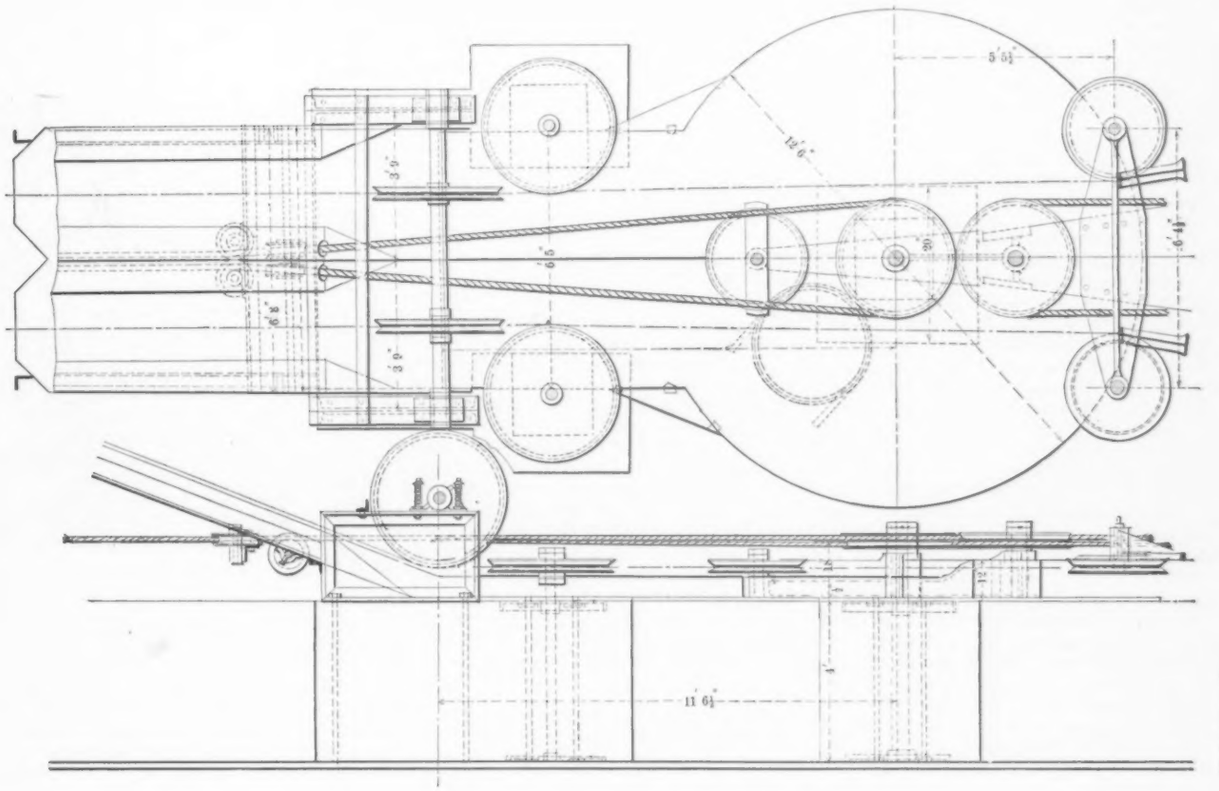


Fig. 8.—Sectional Plan and Elevation of Pivoted End of Reloader.

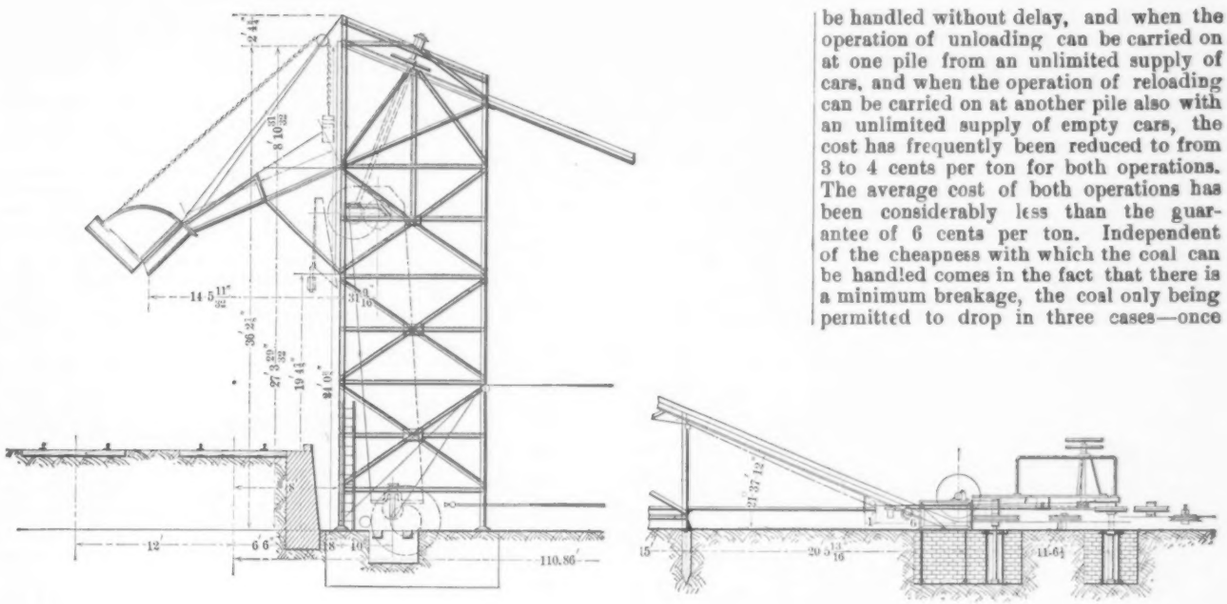


Fig. 9.—Sectional Elevation of Hopper House.

THE COAL STORAGE PLANT AT SOUTH PLAINFIELD.

The main shaft travels at 70 revolutions per minute. At each end of the main shaft is placed a bevel pinion 16 inches in diameter and driving a gear 60 inches in diameter, on a shaft of which is mounted a 40-inch sprocket wheel arranged so that the trimmer chain passes over it in its passage to and around the truss. A fric-

Summary.

The builders of this plant guaranteed to handle 2 net tons of coal per minute with each reloader or trimmer, the cost not to exceed, when the plant was worked to its full capacity, 6 cents per ton for unloading and reloading, this 6 cents also to cover cost of maintenance. When run to the best advantage this figure has been considerably reduced, since when the cars can be handled without delay, and when the operation of unloading can be carried on at one pile from an unlimited supply of cars, and when the operation of reloading can be carried on at another pile also with an unlimited supply of empty cars, the cost has frequently been reduced to from 3 to 4 cents per ton for both operations. The average cost of both operations has been considerably less than the guarantee of 6 cents per ton. Independent of the cheapness with which the coal can be handled comes in the fact that there is a minimum breakage, the coal only being permitted to drop in three cases—once from the loaded car into shute leading to the trimmer, then the few inches from the end of the trimmer trough, and then from the hopper house into the empty car. Another advantage arises from the fact that the plant, taken as a whole, can be placed on ground of practically no value and in almost any desired location, the

only requisite being that it shall be comparatively level.

The original plan of this plant called for 60 trimmers having a total capacity of about 1,200,000 tons, and it is only a question of time when the original ideas will be carried out. So far the system has worked without hitch of any kind and without any breaks to machinery, and, being located midway between the mines and tidewater, has permitted the company to tide over unfavorable markets, and wait for those when better prices could be realized.

The Aluminum Decision.

An entry was made in the United States Circuit Court at Cleveland on the 11th in one of the most important patent cases ever fought in the United States. The action was that of the Pittsburgh Reduction Company of Pittsburgh against the Cowles Electric Smelting & Aluminum Company. The decree was for the complainant, the Pittsburgh Reduction Company, declaring the validity of the Hall patent and that the Cowles Company had been infringing that patent.

The Pittsburgh concern had for some years been manufacturing and selling what is known as pure aluminum. A year or two ago the Cowles Company began its manufacture and sale and a patent infringement suit was begun, the Pittsburgh Company insisting that the Lockport Company was making use of its process. Several sensational affidavits were filed, one on the part of the Pittsburgh Company, telling how it had sent a man into the Lockport works, and how he discovered that it was the Hall process and no other that the Cowles people were using. He swore that the Cowles concern had its establishment barricaded like a fortress.

Two or three months ago the case was heard in Cincinnati, before Judges A. J. Ricks and William H. Taft, on exhibits, affidavits and arguments of counsel. On the 11th the entry of the finding of the court was made and on or before the 20th inst. Judge Taft will file a written and lengthy opinion.

During the pendency of the suit both concerns manufactured the pure aluminum and sold it at an agreed price, approved by the court.

The testimony on record amounts to something over 2000 pages, the suit having been first brought in February, 1891, in the United States Circuit Court, by praying for a preliminary injunction. The chief experts on the side of the Pittsburgh Reduction Company were: Prof. John W. Langley of the Case School of Applied Sciences; Prof. Chas. F. Chandler of Columbia College; Dr. R. W. Raymond, secretary of the American Institute of Mining Engineers, and Chas. M. Hall, the inventor. The attorneys for the Pittsburgh Reduction Company were: George H. Christie and Thomas W. Bakewell of Pittsburgh, to whom, together with the witnesses, much credit is due for the successful issue of the suit. As indicative of the importance of the issues involved, it is stated that the electrolytic process of the Pittsburgh Reduction Company is now the only process used either in this country or in Europe for smelting pure aluminum and for the manufacture of the alloy. Before the introduction of modern methods the price was $8 to $15 per pound for pure aluminum, but by means of the Hall process, used and owned by the Pittsburgh Reduction Company, the selling price has been cut down to 50 cents to 65 cents a pound, which, in comparison with other metals, is about as cheap as copper, bulk for bulk, and cheaper than nickel or tin. The growth of this industry has been very rapid, new uses being found for the metal every day. It is urged that it is only a matter of a short time when it will take a very prominent position in the metal world.

The Heroult process and the Hall process are identical. The former has works at Neuhausen, near Schaffhausen, on the Rhine. Heroult and Hall both applied for patents in the United States Patent Office at about the same time, in 1886, and after an interference suit lasting a year Hall was adjudged a prior inventor. The same question was one of the issues in the present suit, and was also decided in favor of Hall. In the testimony of Professor Langley he says that the Cowles people have "apparently ransacked all the patent literature of the world to find something that would anticipate the Hall invention."

The Hall process primarily consists of dissolving the ore of aluminum in the form of an oxide in a bath of fluoride of aluminum, together with the fluoride of some other metal more electro-positive than aluminum, and then precipitating the metallic aluminum by electrolysis at the positive pole. In this way a continuous operation is carried on. The ore is shoveled in the pots at the top, while the pure metal is drawn off at the bottom, if need be, or ladled out. Therefore the charging or discharging of the materials does not interrupt the action of the process. The metal itself has a purity that has thus far been unattained by any other methods. It is reported that the Cowles Company will carry the case to the higher court.

Money in the Country.

As compared with the figures for January 1, 1892, the Treasury statement of the amount of money coined and issued at present outstanding shows a marked decrease in the amount of gold coin and bullion. Although gold coin has gone into circulation to the extent of only about $5,000,000, the Treasury holds almost $40,000,000 less than a year ago. As against this there is a reduction of $31,000,000 in gold certificates outstanding, so that the net loss of gold to the Treasury is reduced by this amount. The absorption of money by the public in other ways has been mainly satisfied by Treasury notes, in which there is an increase of $46,750,000, and subsidiary silver, in which there is an increase of $4,500,000, the chief decrease besides that in gold certificates being in United States notes—$2,750,000—and currency certificates, a little over $2,000,000. The following table shows the changes in detail:

In Circulation January 1.

	1893. In thousands.	1892. In thousands.	Changes. In thousands.
Gold coin ..	$412,970	$407,999	Inc.. $4,971
Standard silver dollars.	62,822	62,326	Inc.. 496
Subsidiary silver	67,327	62,776	Inc.. 4,550
Gold certificates.....	117,093	148,106	Dec.. 31,012
Silver certificates.....	322,035	320,817	Inc.. 1,217
Treasury notes Act July 14, 1890.....	122,039	75,296	Inc.. 46,743
United States notes.....	330,933	333,767	Dec.. 2,833
Currency certificates.....	7,100	9,265	Dec.. 2,165
National Bank notes.....	168,364	168,427	Dec.. 66
Totals ...	$1,610,683	$1,588,781	Inc.. $21,902

The Treasury holds nearly 6,000,000 standard silver dollars more than at the beginning of last year, nearly $3,000,000 more United States notes and over $1,250,000 more national bank notes. Its holdings of silver bullion are $42,750,000 more than last year. On the other hand, besides the decrease of nearly $40,000,000 in gold coin already mentioned, there is a decrease of $3,250,000 in subsidiary silver, which has gone into circulation. The decrease in gold bullion is very small, being only $500,000. Detailed statement follows:

	1893. In thousands.	1892. In thousands.	Changes. In thousands.
Gold coin.....	$156,662	$196,634	Dec...$39,971
Standard silver dollars.	355,054	349,217	Inc.. 5,836
Subsidiary silver.....	10,571	13,789	Dec.. 3,217
Treasury notes	2,705	2,031	Inc.. 674
United States notes	15,747	12,913	Inc.. 2,833
National bank notes.	6,043	4,651	Inc.. 1,391
Total	$546,784	$579,236	Dec..$32,452
Gold bullion.	81,697	82,212	Dec.. 515
Silver bullion	96,743	53,969	Inc.. 42,774
Total....	$725,225	$715,418	Inc.. $9,806

The Treasury holdings in gold coin and bullion are $236,359,802 in all. Deducting from this amount $117,093,139 in gold certificates outstanding, the amount of free gold in the Treasury is $121,266,663. As against this are outstanding United State notes $330,933,540, and Treasury notes $122,039,656; in all $452,973,196, the gold reserve thus being about 26.7 per cent. On January 1, 1892, the amount of free gold in the Treasury was $130,740,631, against which was outstanding $409,063,402 of notes, the reserve thus being 31.9 per cent. On January 1, 1891, the amount of free gold was $148,972,935, and outstanding notes $370,771,516, the reserve being 40.1 per cent.

Freights on Iron.

A circular issued on the 13th inst. by Commissioner Blanchard of the Central Traffic Association, Chicago, announces the adoption of the following resolutions by the freight officers of the interested roads:

Resolved, That the rates which have been or may be hereafter authorized to apply on pig iron be limited so as to cover only pig iron, mill cinder and scale, in carloads.

Resolved, That rates be provided for iron or steel billets in carloads, not less than 12 gross tons, on the basis of not less than 35 cents per ton to Chicago higher than rates on pig iron to same point.

Resolved, That ferromanganese, manganese ore and spiegeleisen be not included in the list of articles taking billet rates, but take rates as per official classification.

Resolved, That all of the above changes take effect on Central Traffic Association traffic on February 1, 1893, and on joint committee traffic as soon as the concurrence of the trunk lines can be obtained thereto.

Resolved, That the question of an advance in rates on cast-iron pipe be taken up with the Chicago & Ohio River Traffic Association and that until such an advance is arranged for cast-iron pipe may continue to be taken at the present rates per net ton.

Resolved, That the Chicago & Ohio River Traffic Association be requested to advance the rates on billets, &c., from Ohio River points to Chicago & Ohio River Traffic Association territory in conformity with the advance agreed to this day from Central Traffic Association points.

Resolved, That all local committees be requested to advance their rates on billets, &c., in conformity with the advance agreed to today.

A bell weighing 600 pounds and designed as a gift from the Seventh Regiment, N. G., S. N. Y., to the United States Cruiser "New York," is being manufactured at the bell foundry of Clinton H. Meneeley, Troy, N. Y. The bell will be 31 inches in diameter at the mouth and cost $2000. An unusually large amount of silver will enter into its composition, which will be silver, copper and tin from American mines—the first large bell of American metals ever produced in this country. The bell will be magnificently engraved with elaborate designs, a coat of arms and scenes appropriate to the service to which it will be put. An inscription will be placed on the rim, and the whole will be polished like a mirror.

The Relations of Chemistry to Foundry Practice.—I.*

BY CLEMENS JONES, M E., EASTON, PA.

Chemical analysis has for its objects the detection and estimation of the constituent parts of material substances. That it proceeds upon an original separation of compound substances into the elementary substances composing them, and upon a positive identification of these, is an inference readily derived. This process began in an original way, and then became selective. The metals were early discovered to be elementary. As far as our present purpose is concerned, from the nucleus of metals—gold, silver, copper and iron—sprung the long list of elements we now have—64. In later years this has been still further increased. The prolonged, arduous work that established the identity of a single element would make a history of experiments. It would likewise be a history of the patience, skill and devotion to science of a class of men—theorists—who spent their lives in a tireless search after truth, and in its demonstration. From the nature of things, chemistry is an experimental science. An experiment has been aptly defined as a question addressed to nature. Chemistry demonstrated by just such inquiries the broad theorem that matter is indestructible. So grand a principle as this applied to all manner of substances—solid, liquid and gaseous. But this principle demanded that the chemical action of one substance upon another should be accompanied by a change of state, in which the weight of the substance changed should remain unaltered. Therefore, the quantity of the substance changed could be accurately determined, because the existence of fixed laws governed every change. Quantitative analysis became a possibility. By it a substance in whatever state of change or combination could be identified, extracted, exactly weighed and then resolved into its former condition without loss. Water could be split up into its component gases—hydrogen and oxygen. These gases could be separated, weighed, found to exist in the proportion of two parts of hydrogen to one part of oxygen, reunited, chemically combined by a spark and then give precisely the weight of water first taken, and possessing all of its original properties. All material substances, whether in the earth, the sea or the air, could be isolated and their quantities determined with an unfailing accuracy. The proofs surround us. The products of a hundred industries; the forces at work in operating them—iron and copper; heat, power and light. Indeed, in this our day we are aware that the truths of chemistry and its great principle, developed by means so simple as analysis, expand with the growth of knowledge, and extend from the earth to the limits of the celestial system. Certain of the elements so far found in the earth have been discovered in the sun, and even in the remote planets. How much do we owe to this mistress of our civilization—the benefactress of art, philosophy and religion?

The elements, for which we are thus indebted to the researches of chemistry are accordingly the total number of separate indivisible substances found to have entered into the composition of every known body. A compound body may consist of only two elements, as water, for instance, or it may contain more, as sugar, composed of three elements, hydrogen, oxygen, and the third, carbon, or limestone, oxygen, carbon and calcium. Consider that the same principle of chemical constituency holds good for every material body in the organic or inorganic kingdoms. Sugar can be artificially made. Limestone is found to be a proportionate relation of oxygen, carbon and calcium. These elements, then, brought together in the same association produce limestone, or calcium carbonate, which artificial product has properties similar to the naturally occurring substance. The list of elements which concerns the limits of this discussion is as follows: Iron, carbon, silicon, phosphorus, manganese, sulphur, aluminum, arsenic, titanium, copper, calcium, magnesium, and allusion will be made to a few of the more rarely occurring elements—nickel, chromium, tungsten, vanadium and uranium.

Iron.—Chemically pure iron—that is, iron as pure as it can be made—is silver-white in color, soft, ductile, malleable, and rapidly attacked by oxygen. It forms two principal oxides—ferrous oxide, or iron protoxide, of which the salts are green in color, and ferric oxide, or iron sesquioxide, of which the salts are yellow. There is a black oxide also, which is a combination of these two oxides. When oxidation of metallic iron takes place rust is formed. There are two kinds of rust. One is yellowish brown, inclining to a reddish hue; the other is black and tends to form the magnetic oxide. In impure iron the agency of moisture, even in moderately dry air, facilitates this rusting action. The reason of this is that iron decomposes water, which, as you are aware, is composed of the two gases hydrogen and oxygen. The strong attraction or affinity of iron for oxygen splits up the water into its elements; the oxide of iron, or rust, is formed, and hydrogen is liberated. A clean nail placed in a tumbler of water will show this reaction in a few minutes. Iron may be obtained in a state of purity by reducing the oxide in a current of hydrogen. That is, the oxide is heated to facilitate the action, while a current of pure hydrogen gas is passed over it. Aided by the heat, the hydrogen seizes upon the oxygen, metallic iron is left behind, with water as a by-product. Under these conditions it is in a finely divided state, and must be kept from contact with the air, as it is so eager for oxygen that the air sets fire to it, a brilliant flash takes place, and the black magnetic oxide is formed. This phenomenon is familiar about the runners of a blast furnace, or in filling a ladle from a cupola, and frequently on pouring into a mold. The tiny sparks that fly about like little meteors are minute detached particles of iron thrown into the air, which are burned by the oxygen of the air. Iron is not found in the native state on the earth. It is found in meteorites, those peculiar structures which fall to the earth from masses revolving through space, when they pass through the field of the earth's attraction. Nickel is always conspicuously associated with it. In some places, notably Greenland, these masses of meteoric iron are of great size. From the readiness with which it is oxidized, dissolved and reduced, iron forms a great variety of compounds or salts with other chemical reagents. It is indispensable in the arts, in medicine and in the vegetable world.

Carbon.—Carbon is one of the most remarkable elements which we will discuss. As a solid, it occurs in three distinct forms, bearing no resemblance whatever to each other in outward appearance or physical properties. Color, specific gravity, hardness, crystalline character, all differ to such an extent as to have no apparent relations. The first form is the diamond. This, the most valuable and beautiful gem in the mineral kingdom, is pure carbon. It is the hardest of all known bodies; is employed for cutting glass, and will scratch the hardest substance. It can only be cut by means of its own dust, and then it has a high refractive power, a ray of light causing it to gleam with brilliant luster. When burned in oxygen it is found to consist entirely of carbon. The second form of carbon is graphite or plumbago. This is greasy to the touch, so soft that it can be cut by the finger nail, and is very light. Drawn across paper it leaves a black mark, and is hence made into lead pencils. It is also used for lubricating machine bearings and to protect the surface of coarse grains of gunpowder. Pig iron on cooling throws off flakes of graphite, the so called "kish." The third form of carbon is charcoal. Its purest form is lampblack. When animal or vegetable matter is heated to redness in a closed vessel charcoal is produced. Charcoal carbon also exists as coal, coke and animal charcoal. It is still lighter than either of the two foregoing forms of carbon, and, unlike them, does not crystallize. It has a high absorbing power, which is utilized for the purpose of refining raw sugar, and is valuable as a disinfectant. The wide disparity between these three forms of carbon is evident from the description. Yet on combustion with oxygen each of these yield the same weight of the same substance, namely, carbon. That is, 12 parts by weight of each of these substances yield 44 parts by weight of the resulting compound of carbon with oxygen, carbon dioxide, or, as commonly known, carbonic acid. This metalloid, as we shall see, has a deportment with iron which cannot be supplied to metallurgy by any other element. Its rank in the physical world, animal and vegetable, is so vital that neither plant nor man could exist without it. We burn it in our stoves to get physical heat, and consume it in our bodies to supply the waste of tissue. For the purposes of the metallurgy of iron we win carbon from the earth, where its geological position proclaims it to have been buried for ages.

Silicon.—Silicon is the next element to be considered. After oxygen, silicon is the most abundant element in nature.

It has never been discovered in the free or native state, but by means of a powerful electric arc current it has been reduced from its oxide Heat more intense than the blast furnace gives, aided by the electrolytic action of the current in the presence of powerful reducing agents, is required to do this. Silicon may be crystalline or amorphous. In nature it occurs as the oxide, or silica, as in quartz, which is crystalline, or as flint, which is dense and hard and sometimes black in color. Both varieties are sometimes hard enough to scratch glass. Silica is a predominant constituent of all rocks; hence it is found in all kinds of ores, either as silica compounds or as an impurity. In the materials out of which iron is made—ores, fuel and limestone—it is the largest impurity. The slag which comes from the furnace in the manufacture of iron is therefore a compound of silica; that is, it is a silicate. In consequence of the heat and intense reducing power and volume of the blast furnace small quantities of silicon are produced, which, in contact with melted iron, combine with it and make a more fusible alloy.

Phosphorus—As an element, this metalloid enters into the composition of many important bodies. It has been found wherever organic life exists. The oldest rock formations also contain it, usually associated with iron.

Soil, which is produced by the disintegration of rocks, derives in turn its phosphorus from them. Water, air, and the sun decompose even granite rocks, by the familiar action known as "weathering." Plants, and hence their seeds, take up the phosphorus from the soil, and by this process are said to impoverish it. Animals and man absorb from vegetable matter the phosphorus which enters into the com-

* An address before the Foundrymen's Association of Philadelphia.

position of their tissues and bones. Phosphorus does not occur in a free state in nature, but in combination with oxygen and calcium. As the former, which is called phosphoric acid or the pentoxide, we thus see that it existed first in the rocks, then by the economy of nature in the soil. Entering the plants, on which animal life subsists, it is transformed into bones, &c., by uniting with calcium oxide, or lime; on burning these it is obtained as calcium phosphate, or phosphate of lime. We are aware that soils are enriched by the use of artificial, and naturally occurring phosphates. Phosphorus is a soft, yellowish, semi-transparent, waxy solid. It absorbs oxygen rapidly, and hence is easily inflammable on exposure to the air. It burns to phosphoric acid, or the pentoxide. It is largely used to make a composition for friction matches, and gives to them the "phosphorescence" visible in the dark and a disagreeable suffocating odor, caused by slow oxidation. Phosphorus is the most persistent element in its association with iron. Apatite and phosphorite are two of its principal forms, which are often separated from the raw ores to purify them for metallurgical purposes. As affecting iron, the greatest ingenuity has been exercised in the control or elimination of phosphorus, since it imparts properties of varying character, which will be described further on in our discussion.

Manganese.—Manganese is a true metal, reddish white in color, so brittle that it can be readily powdered and is so hard that it will scratch glass. It is slightly heavier than iron, and like that metal decomposes water at ordinary temperatures, with evolution of hydrogen. It is widely distributed in the mineral kingdom, and is found almost as diversely as iron. It is a common ingredient of iron ores. Metallic manganese is said to be slightly magnetic, but owing to the difficulty of making it chemically pure, this property may be due to presence of iron in minute quantity. It has a strong affinity for oxygen, which it is capable of retaining to such an extent that in the arts its oxides are invaluable. It is not found as a native metal, owing to this susceptibility, but occurs as the various oxides, chiefly as the black dioxide or pyrolusite. This substance when heated alone gives up oxygen, and is hence largely used in making oxygen gas. Manganese forms highly colored salts, which are not only useful in making colored tints in the manufacture of glass, but in making valuable reagents for the chemical laboratory. When manganese is reduced from its ores in a blast furnace it is found to unite with carbon and silicon in much the same manner as iron, and can be made into a product containing iron, called spiegeleisen or "spiegel," or a variety called ferromanganese, which may contain 80 per cent. by weight of metallic manganese. These two alloys are used in the manufacture of steel by the Bessemer process. Manganese is an extremely useful element and, as we shall see, has important effects upon the properties of cast iron.

Sulphur.—Sulphur occurs as free or native sulphur in yellow finely shaped crystals, and is found abundantly in volcanic regions. It takes fire easily and burns with a bluish flame to sulphur dioxide, giving off offensive odors. It is used in making matches. Sulphur is plentifully distributed among the minerals and ores of the whole globe. The extent to which it became associated with all metallic groups is indicated by the amount of sulphur-containing ores used in smelting the rarest metals—gold, platinum, silver and a number of others. As examples of this widespread distribution, copper, lead, zinc and even iron are metals smelted from sulphurous ores. To the early workers at metallurgy sulphur was a much dreaded ingredient, and even with modern chemical knowledge and mechanical appliances it is a baneful and capricious element. To the old iron workers it was one of the "devils." Combined with iron, a common and abundant mineral called pyrite (sometimes "iron pyrites") furnishes the material for making one of the most important acids in use—sulphuric acid, commonly called vitriol. The by-product from this process, so-called "purple ore," is considered by some misinformed persons to be a suitable substance for making into pig iron. This same mineral, pyrite, is found in limestone, in anthracite coal, in bituminous coal and hence in coke, and is termed by miners "coal brasses" and "sulphur." It can be easily understood in consequence why, with ores comparatively free from sulphur, this unfaltering companion finds its way into pig iron or any kind of iron or steel produced therefrom. Together with its occurrence with the ores of iron another mineral containing copper is also found. We will endeavor to point out to what extent sulphur is harmful in cast iron.

Aluminum.—Aluminum is the next element to which our attention is directed. This metal, through the publicity given to recent modes of cheap extraction, is tolerably well known. It is a silver white soft metal, capable of being hammered to the thinness of gold foil or drawn into the finest wire. It is but little over twice as heavy as water and three times lighter than iron. Weight for weight it has nearly the strength of iron, but of course its increased bulk and higher cost operate against any immediate prospects it may have of superseding iron for general use. Aluminum takes a high polish like silver, but, unlike that metal, will stand long exposure to corrosive gases without being tarnished. It can be worked cold and hot, and is in use to day for making surgical instruments, cooking utensils, roofing plate, and a class of like articles. In the year 1891 the United States alone produced 150,000 pounds of aluminum. Its oxide is a common ingredient of soils and clays, such as fire clay, or kaolin, marls, slates, &c. Other forms of the pure oxide of aluminum are to be found in the precious gems, ruby and sapphire, the native crystalline occurrence, and in the less valuable varieties, corundum and emery. In hardness the latter varieties stand next to the diamond. In the metallic state, or as the oxide, aluminum forms the base of a number of useful alloys and salts. Porcelain, earthenware and glass are some of the products in which the oxide is an ingredient. This oxide, or alumina, is the only oxide of aluminum As such, it is a common constituent of nearly all iron ores, and is hence introduced into the blast furnace, where under certain conditions minute quantities of metallic aluminum are reduced and combine with the alloy of pig iron. The tenacity with which aluminum holds to its combined oxygen makes it exceedingly difficult of reduction, and recourse is had in modern times to the more intense heat and reducing power of the electric current. The exact influence of aluminum upon iron is not yet decided, and its employment to advantage is still the subject of experiment. As far as possible we will treat of the facts in this connection.

Arsenic.—Arsenic is a metal having pronounced peculiarities. It is brittle, of a bright grayish color, and almost as heavy as iron. It will not fuse except under certain conditions, owing to its highly volatile character. Heated to dull redness with exclusion of air, it disappears as a perfectly colorless vapor, which has a penetrating garlic-like odor. In the metallic state this peculiarity serves for its detection, since the smallest quantity burned in the air takes fire with a bluish flame, and while it is thus chiefly converted into the trioxide the heat is sufficient to volatilize some of the metal, which gives off its characteristic smell. It is very readily reduced to the metallic state. The trioxide, arsenious oxide, acid so-called, is a white powder, and in soluble compounds is a dreadful poison. Arsenic occurs in the free state. It occurs combined with sulphur compounds generally, and in this state is associated often with nickel in the ores of iron. Although so highly volatile and having properties opposed to the conditions which would bring it into the hearth of a blast furnace, yet it frequently enters pig iron and in any appreciable quantity is productive of injurious effects. From its association with sulphur, arsenic is sometimes found in fuels. I have taken crystals of arsenic trioxide from the crucible lining in a blast furnace which had used materials in which arsenic was never suspected.

Titanium.—Titanium is a metal strongly resembling tin. While it is a rare metal, its dioxide, called titanic acid, is a frequent impurity in the ores of iron, notably the magnetic ores, and accordingly the metal is usually met with combined in pig iron. In the blast furnace titanium has a tendency to accumulate, and is nearly always to be found in the hearth after blowing out a furnace. It is in the shape of beautiful copper-colored cubes and octahedrons, and is combined in this state with certain other elements. P. W. Shimer has found that titanium exists in pig iron, combined with carbon, and has succeeded in separating the compound in the state of minute symmetrical crystals.

Copper.—Copper is one of the metals of antiquity. The art of tempering or hardening it has been lost, although recovered by the newspapers at stated intervals. Its usefulness in the arts has been the means of making its properties widely known. It is perhaps familiar knowledge that it is compounded into a great variety of alloys, such as brass, bronze, bell metal, &c., all of which are hard and brittle when cooled slowly, but become soft upon being heated and then suddenly chilled. Copper is found as native or free copper, and as such, or combined with other elements, is abundant in nearly all countries. It has a deep red color, is ductile and malleable. For electrical purposes its usefulness is well known. Found in pig iron it may have been derived from any of the materials used in a blast furnace.

Calcium.—Calcium is a light yellowish colored metal. There are several modes of producing it, among which the electric current is employed with success. It is very oxidizable and burns with a bright flame in the air, forming calcium monoxide or lime. Limestone is, therefore, the kind of rock having calcium as a base. Geologically, limestone occurs among the oldest rock formations, and occupies vast areas of the earth's crust In the great valley of Pennsylvania, along the banks of the Lehigh River, it lies in all possible positions, and covers thousands of acres in an unbroken field. Calcium is also combined in a different state in chalk and gypsum, and is present as a mineral constituent in a majority of formations. Marble is a variety of limestone. When marble or common limestone is heated the carbonic acid with which the calcium is combined is driven off and a white infusible substance called caustic or quicklime remains. This is the calcium monoxide, which combines with water with generation of great heat, forming calcium hydroxide, or slaked lime. Either slaked lime or lime dissolved in water have a strong affinity for carbonic acid, which they absorb rapidly from the air, reproducing calcium carbonate. We utilize this property in mortars and cements, to which they owe the hardening or setting. As lime calcium finds a hundredfold uses. In the blast furnace and cupola it is employed as the

vehicle for carrying off undesirable impurities. Lime and silica alone are infusible compounds. United they fuse readily, combining to form various silicates of lime, &c., and in addition to this they open up to the action of the gases the finer particles that would otherwise be deleterious to the final products. Calcium carbonate crystallizes in two distinct forms; the commoner form is named calcite.

Magnesium.—Magnesium is a metal distinguished in its occurrence by being closely related to calcium. Like calcium it has but one oxide, called magnesia, the monoxide. It exists in the crystalline and massive state, as dolomite, analogous to calcite. From the nature of the oxides lime and magnesia, the metals calcium and magnesium may be said to replace each other interchangeably. There are few limestones which are non-crystalline that do not contain magnesia in small quantity. In the metallic state magnesium is silver white, oxidizes but slowly, and fuses at a low red heat. It can be cast, is soft, very light and ductile, though usually it is pressed into wire. In the form of ribbon magnesium can be ignited with a match, and burns with a dazzling light, which is white but very rich in chemically active rays. On this account it is employed as a substitute for sunlight in photography. The magnesium flash light is produced by the combustion of the metal finely powdered. The white substance found on these lamps is the resulting oxide—magnesia. Associated with lime, it finds its way into the blast furnace, but is often specially used as dolomite alone to obtain certain results in fluxing. Both magnesium and calcium are common ingredients of iron ores, more particularly hematites, and although so easily oxidized and extremely hard to reduce are considered by some authorities to become incorporated in pig irons.

We have now come to the more rarely occurring elements, nickel, chromium, tungsten, vanadium and uranium. Suffice it for our present purpose to state that they are all metals, as we have at this point learned to consider such, and although differing radically in chemical and physical aspects they appear to give but one property to iron and steel in the quantities in which they have so far been introduced. We have to deal with them only as they may be present in cast iron, but since their occurrence in nature is in minerals nearly altogether associated with iron ores, we may have future occasion to refer the peculiar behavior of a casting to the indication of one or more of these elements, and we are then prepared to know at least that these metals are accompanied by given effects.

The Gatling Town Site Company, to build near Buffalo, N. Y., have been incorporated at Albany, with a capital of $1,000,000, divided into $100 shares, among the stockholders being a number of those interested in the Gatling Ordnance Company. The incorporators are: Richard Dewey Gatling, Carroll Sprigg, New York; George M. Bailey, Gue C. Hardesty, Harry E. Choate, Buffalo. The directors of the Gatling Ordnance Company accepted the site of Idlewood, near Buffalo, early in November; the directors of the Bailey Land Investment Company, who brought the Gatling enterprise to Buffalo, immediately purchased enough land surrounding the site of the big steel plant for a town, to be named after the great inventor. It has been decided not only to give 20 acres of land at the Idlewood station of the W. N. Y. & P. Railroad to the Gatling Ordnance Company, but also to reserve 200 acres to be similarly donated to factories which will locate there in the future.

Treasury Decisions.

Circular.—Importation of Black Plate.

TREASURY DEPARTMENT,
October 1, 1892

To Collectors and other Officers of the Customs:

The attention of the Department has been called to the allegation that black plate has been imported under evasive descriptions and at less than the legal rate of duty provided by paragraphs 142 and 144 of Schedule C of the act of October 1, 1890.

In order to guard against misleading terms in entries of black plate, the attention of customs officers is called to the necessity of insisting that consignees of such merchandise shall comply with article 278 of the Treasury regulations of 1892, which prescribes that "the description on the entry of the merchandise shall be in terms of the tariff laws."

O. L. SPAULDING, Acting Sec'y.

Drawback on Driving Wheels.

TREASURY DEPARTMENT,
October 11, 1892.

SIR: On the exportation of "driving wheels" manufactured by Burnham, Williams & Co. of Philadelphia, Pa., in part from imported steel crucible tires, a drawback will be allowed equal in amount to the duties paid on such tires, less the legal deduction of 1 per cent., and on the exportation of "tender and truck wheels" manufactured by the same firm in part from imported steel crucible tires a drawback will be allowed equal in amount to the duty paid on 99 per cent. of the weight of the imported tires, less the legal deduction of 1 per cent. Respectfully yours, O. L. SPAULDING, Acting Sec'y.

(1837 *g.*)
COLLECTOR OF CUSTOMS, Philadelphia, Pa.

Drawback on Nails and Tacks.

TREASURY DEPARTMENT,
October 15, 1892.

SIR: On the exportation of nails and tacks manufactured wholly from imported scrap steel or boiler-plate shearings, a drawback will be allowed equal in amount to the duty paid on the material used in the manufacture, less the legal deduction of 1 per cent.

The quantity of the material so used shall be determined by adding to the net weight of the exported articles the following percentages, viz.: For Hungarian nails, 13 per cent.; for cut and carpet tacks and shoe nails, 12 per cent.; for shoe tacks, 13½ per cent. Respectfully yours, O. L. SPAULDING, Acting Sec'y.

(73 *g.*)
COLLECTOR OF CUSTOMS, Boston, Mass.

Drawback on Bolts.

TREASURY DEPARTMENT,
November 23, 1892.

SIR: On the exportation of bolts, with nuts of domestic materials attached, manufactured by A. M. Hayden of Philadelphia, Pa., from imported Norway iron, a drawback will be allowed equal in amount to the duty paid on the imported iron used in the manufacture of the bolts, less the legal deduction of 1 per cent.

The quantity of the imported iron so used shall be determined by deducting from the total weight of the exported bolts and nuts, as ascertained by the United States weigher, the weight of the nuts attached to the several sizes of bolts, computed on the basis of the following schedule:

Sizes of bolts.	Weight of nuts per 1,000
3-16 inch	7 pounds.
¼ inch	12 pounds.
5-16 inch	20 pounds.
⅜ inch	30 pounds.
7-16 inch	40 pounds.

The drawback entry must specify the number of each size of bolts exported.

Respectfully yours,
O. L. SPAULDING, Acting Sec'y.

(2071 *g.*)
COLLECTOR OF CUSTOMS, Philadelphia, Pa.

Iron Wire Netting.

Before the United States General Appraisers at New York, October 27, 1892. In the matter of the protest, 16,186*b*-7657, of O. G. Hempstead & Son, against the decision of the Collector of Customs at Philadelphia, as to the rate and amount of duties chargeable on certain iron wire netting, imported per "Indiana," May 27, 1892. Opinion by Wilkinson, General Appraiser.

The merchandise is iron wire netting, made of wire smaller than No. 26 wire gauge. The wire is valued at over 4 cents a pound, and the specific duty upon it would not equal 45 per cent. ad valorem. The duty upon the wire is therefore 45 per cent., with an additional duty of 2 cents a pound upon the made up article, all in accordance with the appropriate provisos of paragraph 148, N. T.

The claim that the netting is dutiable either at 3 cents a pound and 2 cents a pound additional or at 45 per cent., under paragraph 215, is overruled, and the decision of the Collector is affirmed.

Steel in Coal-Oil Barrels.

Before the United States General Appraisers at New York, October 28, 1892. In the matter of the protest, 33,072*a*-18,488 of Miller & Van Winkle, against the decision of the Collector of Customs at New York as to the rate and amount of duties chargeable on certain steel, imported per "Nomadic," June 14, 1892. Opinion by Sharretts, General Appraiser.

The facts in this case appearing on the face of the papers are as follows—namely: The appellants purchased abroad certain strips or forms of steel not otherwise provided for in the tariff act than in paragraph 146, N. T. The price paid for this steel was less than 3 cents per pound. They also purchased coal-oil barrels of American manufacture, in which the steel was packed for transportation to the United States. The cost of the barrels and packing charges added to the value of the steel made the total cost thereof more than 3 cents per pound.

The Collector accordingly assessed duty on the steel at 1 6 cents per pound, under paragragh 146, N. T.

The appellants in their protest claim that the American coal-oil barrels being entitled to free entry on their return to the United States, the Collector erred in adding the value thereof to the steel strips. This contention, in our opinion, is not well founded. Section 19, act of June 10, 1890, provides that whenever merchandise is subject to an ad valorem duty based upon or regulated in any manner by the value thereof the duty shall be assessed upon the actual market value or wholesale price, . . . including the value of . . . coverings of any kind, and all other costs, charges and expenses incident to placing the merchandise in condition packed ready for shipment to the United States, &c.

The merchandise in question is subject to a duty regulated by the value thereof, and the barrels were purchased and used as coverings therefor. It is not deemed material by us to inquire if, as alleged by the appellants, the barrels would have been entitled to free entry if imported empty. The facts justify us in holding that the Collector committed no error in adding the invoice value of the barrels, together with the cost and expenses of placing the merchandise in condition packed ready for shipment to the United States, to the value of the steel in the ascertainment of its dutiable value.

The protest is overruled and the Collector's decision is affirmed.

position of their tissues and bones. Phosphorus does not occur in a free state in nature, but in combination with oxygen and calcium. As the former, which is called phosphoric acid or the pentoxide, we thus see that it existed first in the rocks, then by the economy of nature in the soil. Entering the plants, on which animal life subsists, it is transformed into bones, &c., by uniting with calcium oxide, or lime; on burning these it is obtained as calcium phosphate, or phosphate of lime. We are aware that soils are enriched by the use of artificial, and naturally occurring phosphates. Phosphorus is a soft, yellowish, semi-transparent, waxy solid. It absorbs oxygen rapidly, and hence is easily inflammable on exposure to the air. It burns to phosphoric acid, or the pentoxide. It is largely used to make a composition for friction matches, and gives to them the "phosphorescence" visible in the dark and a disagreeable suffocating odor, caused by slow oxidation. Phosphorus is the most persistent element in its association with iron. Apatite and phosphorite are two of its principal forms, which are often separated from the raw ores to purify them for metallurgical purposes. As affecting iron, the greatest ingenuity has been exercised in the control or elimination of phosphorus, since it imparts properties of varying character, which will be described further on in our discussion.

Manganese.—Manganese is a true metal, reddish white in color, so brittle that it can be readily powdered and is so hard that it will scratch glass. It is slightly heavier than iron, and like that metal decomposes water at ordinary temperatures, with evolution of hydrogen. It is widely distributed in the mineral kingdom, and is found almost as diversely as iron. It is a common ingredient of iron ores. Metallic manganese is said to be slightly magnetic, but owing to the difficulty of making it chemically pure, this property may be due to presence of iron in minute quantity. It has a strong affinity for oxygen, which it is capable of retaining to such an extent that in the arts its oxides are invaluable. It is not found as a native metal, owing to this susceptibility, but occurs as the various oxides, chiefly as the black dioxide or pyrolusite. This substance when heated alone gives up oxygen, and is hence largely used in making oxygen gas. Manganese forms highly colored salts, which are not only useful in making colored tints in the manufacture of glass, but in making valuable reagents for the chemical laboratory. When manganese is reduced from its ores in a blast furnace it is found to unite with carbon and silicon in much the same manner as iron, and can be made into a product containing iron, called spiegeleisen or "spiegel," or a variety called ferromanganese, which may contain 80 per cent. by weight of metallic manganese. These two alloys are used in the manufacture of steel by the Bessemer process. Manganese is an extremely useful element and, as we shall see, has important effects upon the properties of cast iron.

Sulphur.—Sulphur occurs as free or native sulphur in yellow finely shaped crystals, and is found abundantly in volcanic regions. It takes fire easily and burns with a bluish flame to sulphur dioxide, giving off offensive odors. It is used in making matches. Sulphur is plentifully distributed among the minerals and ores of the whole globe. The extent to which it became associated with all metallic groups is indicated by the amount of sulphur-containing ores used in smelting the rarest metals—gold, platinum, silver and a number of others. As examples of this widespread distribution, copper, lead, zinc and even iron are metals smelted from sulphurous ores. To the early workers at metallurgy sulphur was a much dreaded ingredient, and even with modern chemical knowledge and mechanical appliances it is a baneful and capricious element. To the old iron workers it was one of the "devils." Combined with iron, a common and abundant mineral called pyrite (sometimes "iron pyrites") furnishes the material for making one of the most important acids in use—sulphuric acid, commonly called vitriol. The by-product from this process, so-called "purple ore," is considered by some misinformed persons to be a suitable substance for making into pig iron. This same mineral, pyrite, is found in limestone, in anthracite coal, in bituminous coal and hence in coke, and is termed by miners "coal brasses" and "sulphur." It can be easily understood in consequence why, with ores comparatively free from sulphur, this unfaltering companion finds its way into pig iron or any kind of iron or steel produced therefrom. Together with its occurrence with the ores of iron another mineral containing copper is also found. We will endeavor to point out to what extent sulphur is harmful in cast iron.

Aluminum.—Aluminum is the next element to which our attention is directed. This metal, through the publicity given to recent modes of cheap extraction, is tolerably well known. It is a silver white soft metal, capable of being hammered to the thinness of gold foil or drawn into the finest wire. It is but little over twice as heavy as water and three times lighter than iron. Weight for weight it has nearly the strength of iron, but of course its increased bulk and higher cost operate against any immediate prospects it may have of superseding iron for general use. Aluminum takes a high polish like silver, but, unlike that metal, will stand long exposure to corrosive gases without being tarnished. It can be worked cold and hot, and is in use to day for making surgical instruments, cooking utensils, roofing plate, and a class of like articles. In the year 1891 the United States alone produced 150,000 pounds of aluminum. Its oxide is a common ingredient of soils and clays, such as fire clay, or kaolin, marls, slates, &c. Other forms of the pure oxide of aluminum are to be found in the precious gems, ruby and sapphire, the native crystalline occurrence, and in the less valuable varieties, corundum and emery. In hardness the latter varieties stand next to the diamond. In the metallic state, or as the oxide, aluminum forms the base of a number of useful alloys and salts. Porcelain, earthenware and glass are some of the products in which the oxide is an ingredient. This oxide, or alumina, is the only oxide of aluminum As such, it is a common constituent of nearly all iron ores, and is hence introduced into the blast furnace, where under certain conditions minute quantities of metallic aluminum are reduced and combine with the alloy of pig iron. The tenacity with which aluminum holds to its combined oxygen makes it exceedingly difficult of reduction, and recourse is had in modern times to the more intense heat and reducing power of the electric current. The exact influence of aluminum upon iron is not yet decided, and its employment to advantage is still the subject of experiment. As far as possible we will treat of the facts in this connection.

Arsenic.—Arsenic is a metal having pronounced peculiarities. It is brittle, of a bright grayish color, and almost as heavy as iron. It will not fuse except under certain conditions, owing to its highly volatile character. Heated to dull redness with exclusion of air, it disappears as a perfectly colorless vapor, which has a penetrating garlic-like odor. In the metallic state this peculiarity serves for its detection, since the smallest quantity burned in the air takes fire with a bluish flame, and while it is thus chiefly converted into the trioxide the heat is sufficient to volatilize some of the metal, which gives off its characteristic smell. It is very readily reduced to the metallic state. The trioxide, arsenious oxide, acid so-called, is a white powder, and in soluble compounds is a dreadful poison. Arsenic occurs in the free state. It occurs combined with sulphur compounds generally, and in this state is associated often with nickel in the ores of iron. Although so highly volatile and having properties opposed to the conditions which would bring it into the hearth of a blast furnace, yet it frequently enters pig iron and in any appreciable quantity is productive of injurious effects. From its association with sulphur, arsenic is sometimes found in fuels. I have taken crystals of arsenic trioxide from the crucible lining in a blast furnace which had used materials in which arsenic was never suspected.

Titanium.—Titanium is a metal strongly resembling tin. While it is a rare metal, its dioxide, called titanic acid, is a frequent impurity in the ores of iron, notably the magnetic ores, and accordingly the metal is usually met with combined in pig iron. In the blast furnace titanium has a tendency to accumulate, and is nearly always to be found in the hearth after blowing out a furnace. It is in the shape of beautiful copper-colored cubes and octahedrons, and is combined in this state with certain other elements. P. W. Shimer has found that titanium exists in pig iron, combined with carbon, and has succeeded in separating the compound in the state of minute symmetrical crystals.

Copper.—Copper is one of the metals of antiquity. The art of tempering or hardening it has been lost, although recovered by the newspapers at stated intervals. Its usefulness in the arts has been the means of making its properties widely known. It is perhaps familiar knowledge that it is compounded into a great variety of alloys, such as brass, bronze, bell metal, &c., all of which are hard and brittle when cooled slowly, but become soft upon being heated and then suddenly chilled. Copper is found as native or free copper, and as such, or combined with other elements, is abundant in nearly all countries. It has a deep red color, is ductile and malleable. For electrical purposes its usefulness is well known. Found in pig iron it may have been derived from any of the materials used in a blast furnace.

Calcium.—Calcium is a light yellowish colored metal. There are several modes of producing it, among which the electric current is employed with success. It is very oxidizable and burns with a bright flame in the air, forming calcium monoxide or lime. Limestone is, therefore, the kind of rock having calcium as a base. Geologically, limestone occurs among the oldest rock formations, and occupies vast areas of the earth's crust In the great valley of Pennsylvania, along the banks of the Lehigh River, it lies in all possible positions, and covers thousands of acres in an unbroken field. Calcium is also combined in a different state in chalk and gypsum, and is present as a mineral constituent in a majority of formations. Marble is a variety of limestone. When marble or common limestone is heated the carbonic acid with which the calcium is combined is driven off and a white infusible substance called caustic or quicklime remains. This is the calcium monoxide, which combines with water with generation of great heat, forming calcium hydroxide, or slaked lime. Either slaked lime or lime dissolved in water have a strong affinity for carbonic acid, which they absorb rapidly from the air, reproducing calcium carbonate. We utilize this property in mortars and cements, to which they owe the hardening or setting. As lime calcium finds a hundredfold uses. In the blast furnace and cupola it is employed as the

vehicle for carrying off undesirable impurities. Lime and silica alone are infusible compounds. United they fuse readily, combining to form various silicates of lime, &c., and in addition to this they open up to the action of the gases the finer particles that would otherwise be deleterious to the final products. Calcium carbonate crystallizes in two distinct forms; the commoner form is named calcite.

Magnesium.—Magnesium is a metal distinguished in its occurrence by being closely related to calcium. Like calcium it has but one oxide, called magnesia, the monoxide. It exists in the crystalline and massive state, as dolomite, analogous to calcite. From the nature of the oxides lime and magnesia, the metals calcium and magnesium may be said to replace each other interchangeably. There are few limestones which are non-crystalline that do not contain magnesia in small quantity. In the metallic state magnesium is silver white, oxidizes but slowly, and fuses at a low red heat. It can be cast, is soft, very light and ductile, though usually it is pressed into wire. In the form of ribbon magnesium can be ignited with a match, and burns with a dazzling light, which is white but very rich in chemically active rays. On this account it is employed as a substitute for sunlight in photography. The magnesium flash light is produced by the combustion of the metal finely powdered. The white substance found on these lamps is the resulting oxide—magnesia. Associated with lime, it finds its way into the blast furnace, but is often specially used as dolomite alone to obtain certain results in fluxing. Both magnesium and calcium are common ingredients of iron ores, more particularly hematites, and although so easily oxidized and extremely hard to reduce are considered by some authorities to become incorporated in pig irons.

We have now come to the more rarely occurring elements, nickel, chromium, tungsten, vanadium and uranium. Suffice it for our present purpose to state that they are all metals, as we have at this point learned to consider such, and although differing radically in chemical and physical aspects they appear to give but one property to iron and steel in the quantities in which they have so far been introduced. We have to deal with them only as they may be present in cast iron, but since their occurrence in nature is in minerals nearly altogether associated with iron ores, we may have future occasion to refer the peculiar behavior of a casting to the indication of one or more of these elements, and we are then prepared to know at least that these metals are accompanied by given effects.

The Gatling Town Site Company, to build near Buffalo, N. Y., have been incorporated at Albany, with a capital of $1,000,000, divided into $100 shares, among the stockholders being a number of those interested in the Gatling Ordnance Company. The incorporators are: Richard Dewey Gatling, Carroll Sprigg, New York; George M. Bailey, Gue C. Hardesty, Harry E. Choate, Buffalo. The directors of the Gatling Ordnance Company accepted the site of Idlewood, near Buffalo, early in November; the directors of the Bailey Land Investment Company, who brought the Gatling enterprise to Buffalo, immediately purchased enough land surrounding the site of the big steel plant for a town, to be named after the great inventor. It has been decided not only to give 20 acres of land at the Idlewood station of the W. N. Y. & P. Railroad to the Gatling Ordnance Company, but also to reserve 200 acres to be similarly donated to factories which will locate there in the future.

Treasury Decisions.

Circular.—Importation of Black Plate.

TREASURY DEPARTMENT,
October 1, 1892

To Collectors and other Officers of the Customs:

The attention of the Department has been called to the allegation that black plate has been imported under evasive descriptions and at less than the legal rate of duty provided by paragraphs 142 and 144 of Schedule C of the act of October 1, 1890.

In order to guard against misleading terms in entries of black plate, the attention of customs officers is called to the necessity of insisting that consignees of such merchandise shall comply with article 278 of the Treasury regulations of 1892, which prescribes that "the description on the entry of the merchandise shall be in terms of the tariff laws."

O. L. SPAULDING, Acting Sec'y.

Drawback on Driving Wheels.

TREASURY DEPARTMENT,
October 11, 1892.

SIR: On the exportation of "driving wheels" manufactured by Burnham, Williams & Co. of Philadelphia, Pa., in part from imported steel crucible tires, a drawback will be allowed equal in amount to the duties paid on such tires, less the legal deduction of 1 per cent., and on the exportation of "tender and truck wheels" manufactured by the same firm in part from imported steel crucible tires a drawback will be allowed equal in amount to the duty paid on 99 per cent. of the weight of the imported tires, less the legal deduction of 1 per cent. Respectfully yours, O. L. SPAULDING, Acting Sec'y.

(1837 *g.*)

COLLECTOR OF CUSTOMS, Philadelphia, Pa.

Drawback on Nails and Tacks.

TREASURY DEPARTMENT,
October 15, 1892.

SIR: On the exportation of nails and tacks manufactured wholly from imported scrap steel or boiler-plate shearings, a drawback will be allowed equal in amount to the duty paid on the material used in the manufacture, less the legal deduction of 1 per cent.

The quantity of the material so used shall be determined by adding to the net weight of the exported articles the following percentages, viz.: For Hungarian nails, 13 per cent.; for cut and carpet tacks and shoe nails, 12 per cent.; for shoe tacks, 13½ per cent. Respectfully yours, O. L. SPAULDING, Acting Sec'y.

(73 *g.*)

COLLECTOR OF CUSTOMS, Boston, Mass.

Drawback on Bolts.

TREASURY DEPARTMENT,
November 23, 1892.

SIR: On the exportation of bolts, with nuts of domestic materials attached, manufactured by A. M. Hayden of Philadelphia, Pa., from imported Norway iron, a drawback will be allowed equal in amount to the duty paid on the imported iron used in the manufacture of the bolts, less the legal deduction of 1 per cent.

The quantity of the imported iron so used shall be determined by deducting from the total weight of the exported bolts and nuts, as ascertained by the United States weigher, the weight of the nuts attached to the several sizes of bolts, computed on the basis of the following schedule:

Sizes of bolts.	Weight of nuts per 1,000
3-16 inch	7 pounds.
¼ inch	12 pounds.
5-16 inch	20 pounds.
⅜ inch	30 pounds.
7-16 inch	40 pounds.

The drawback entry must specify the number of each size of bolts exported.

Respectfully yours,
O. L. SPAULDING, Acting Sec'y.

(2071 *g.*)

COLLECTOR OF CUSTOMS, Philadelphia, Pa.

Iron Wire Netting.

Before the United States General Appraisers at New York, October 27, 1892. In the matter of the protest, 16,1865-7657, of O. G. Hempstead & Son, against the decision of the Collector of Customs at Philadelphia, as to the rate and amount of duties chargeable on certain iron wire netting, imported per "Indiana," May 27, 1892. Opinion by Wilkinson, General Appraiser.

The merchandise is iron wire netting, made of wire smaller than No. 26 wire gauge. The wire is valued at over 4 cents a pound, and the specific duty upon it would not equal 45 per cent. ad valorem. The duty upon the wire is therefore 45 per cent., with an additional duty of 2 cents a pound upon the made up article, all in accordance with the appropriate provisos of paragraph 148, N. T.

The claim that the netting is dutiable either at 3 cents a pound and 2 cents a pound additional or at 45 per cent., under paragraph 215, is overruled, and the decision of the Collector is affirmed.

Steel in Coal-Oil Barrels.

Before the United States General Appraisers at New York, October 28, 1892. In the matter of the protest, 33,072*a*-18,488 of Miller & Van Winkle, against the decision of the Collector of Customs at New York as to the rate and amount of duties chargeable on certain steel, imported per "Nomadic," June 14, 1892. Opinion by Sharretts, General Appraiser.

The facts in this case appearing on the face of the papers are as follows—namely: The appellants purchased abroad certain strips or forms of steel not otherwise provided for in the tariff act than in paragraph 146, N. T. The price paid for this steel was less than 3 cents per pound. They also purchased coal-oil barrels of American manufacture, in which the steel was packed for transportation to the United States. The cost of the barrels and packing charges added to the value of the steel made the total cost thereof more than 3 cents per pound.

The Collector accordingly assessed duty on the steel at 1 6 cents per pound, under paragragh 146, N. T.

The appellants in their protest claim that the American coal-oil barrels being entitled to free entry on their return to the United States, the Collector erred in adding the value thereof to the steel strips. This contention, in our opinion, is not well founded. Section 19, act of June 10, 1890, provides that whenever merchandise is subject to an ad valorem duty based upon or regulated in any manner by the value thereof the duty shall be assessed upon the actual market value or wholesale price, . . . including the value of . . . coverings of any kind, and all other costs, charges and expenses incident to placing the merchandise in condition packed ready for shipment to the United States, &c.

The merchandise in question is subject to a duty regulated by the value thereof, and the barrels were purchased and used as coverings therefor. It is not deemed material by us to inquire if, as alleged by the appellants, the barrels would have been entitled to free entry if imported empty. The facts justify us in holding that the Collector committed no error in adding the invoice value of the barrels, together with the cost and expenses of placing the merchandise in condition packed ready for shipment to the United States, to the value of the steel in the ascertainment of its dutiable value.

The protest is overruled and the Collector's decision is affirmed.

Nickel Steel.

Jules Garnier, a French engineer, who has been prominently connected with the development of the nickel industry, sends to *Le Génie Civil* a letter giving the results of a number of tests made in September, 1892, at the Cleveland Rolling Mill Company's Works, to determine the relative quality of steel with and without the addition of nickel. The two steels, as is shown in the accompanying table, differed only in the amount of nickel added to one of them, the quantity being about 3 per cent.

The method of manufacture and the charges of both heats were absolutely identical. The ingots for both heats were rolled into boiler plate under ordinary conditions. The tests, details of which are given in the above table, show the following general results:

1. Nickel steel has on an average a higher limit of elasticity of 11,400 pounds per square inch, or nearly 31 per cent.

2. Nickel steel has an ultimate tensile strength greater by 10,400 pounds per square inch, or an increase of about 20 per cent.

3. The ductility is not reduced by the presence of nickel. The nickel used was made from Sudbury ores at the Brooklyn Nickel Works, near Cleveland—a refinery built according to the plans of Jules Garnier.

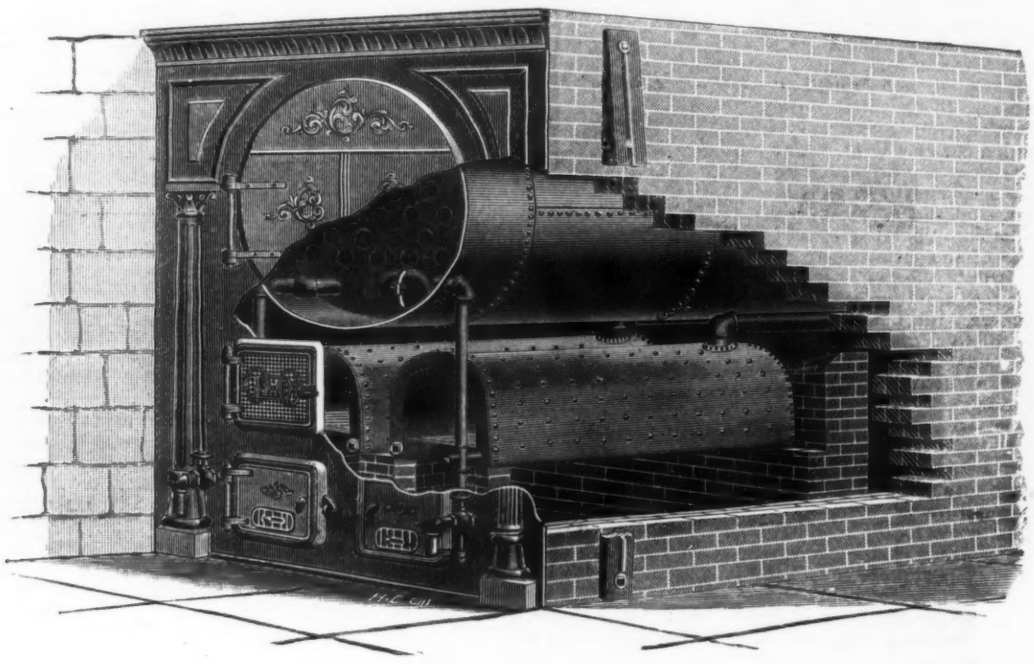
Charge	Size in inches. 8-inch specimen.	Section. Square inch.	Elongation. Per cent.	Elastic limit. Pounds per square inch.	Tensile strength. Pounds per square inch.	Remarks.
Nickel steel:						
Scrap, 9,000 pounds	1.602 x 0.300	0.4806	23¾	.....	64,080	not annealed
Pig, 9,000 pounds	1.545 x 0.245	0.403	26	47,100	68,370	.....
Ferro, 165 pounds	1.605 x 0.302	0.4847	25	44,700	66,000	.....
Nickel, 540 pounds	1.582 x 0.245	0.3875	24½	47,400	67,100	.....
	1.495 x 0.310	0.483	26	47,300	64,890	annealed
	1.495 x 0.310	0.483	23¾	48,200	66,200	.....
Ordinary steel.						
Scrap, 9,000 pounds	1.545 x 0.245	0.3785	26	35,700	55,500	not annealed
Pig, 9,000 pounds	1.666 x 0.245	0.408	26	35,560	54,600	....
Ferro, 160 pounds	1.670 x 0 292	0.4876	27½	32,800	53,900	....
	1.640 x 0.290	0.4756	32	34,060	52,500	....
	1.500 x 0.303	0.454	27	35,500	53,700	annealed
	1.480 x 0.305	0 451	25	37,900	56,500	....

The *Joliet News* of January 9 prints an elaborate account of the steps taken by Hartman Bros. & Co. of Beaver Falls, Pa., "to build a Western plant for the manufacture of woven wire mats, wire fence and wire specialties. A person calling himself C. E. Rivers has been posing as the representative of the company. We are advised by N. W. Hartman, president of the Hartman Mfg. Company, that they have never thought of removing the plant to the West. Mr. Hartman writes: "This is probably the same party who successfully worked a similar scheme at Fredericksburg, Va., some three years ago, when he succeeded in getting some money and faring sumptuously at the expense of the good people of that town, and fortunately managed to get away before the swindle was discovered."

At Pittsburgh last week the trial of Hugh Dempsey, District Master Workman of the Knights of Labor; J. M. Davidson and Robert Beatty, charged with poisoning non union workmen in the Homestead Steel Works in August of last year, was taken up. Beatty is accused of having arranged with Davidson and other cooks at the works to administer the poison and Dempsey is accused of furnishing it. Dempsey is also charged with having procured and disbursed the money used to carry out the scheme.

The Orvis Down-Draft Furnace.

By reference to the accompanying engravings this furnace will be seen to consist of two double steel water arches, spanning separate grate surfaces. The furnaces are so arranged as to provide a central upward passage between the arches where the escaping volatile products of combustion, issuing in divided streams from the two furnaces, meet. The intense heat here generated then envelops the boiler, the currents being as indicated in Fig. 2.



THE ORVIS DOWN-DRAFT FURNACE

It is not claimed that this construction produces a smoke consumer, but that, as the combustion is perfect, the coal is burned without smoke. No cold air can possibly come in contact with the shell of the boiler at any time. The arches may be constructed of either steel or of fire brick, tile or any other refractory material and be equally effective so far as the combustion of fuel is concerned; but the water-filled arches are the more durable and economical, as they add so largely to the water heating surfaces and promote a rapid circulation of water through the boiler, arches and grate bars. The inventor of the double arch system has worked upon the theory that solid as well as liquid hydrocarbons under the influence of heat are reduced by fractional distillation, a very high degree of heat being required to distill all the gases contained in solid fuels. The closed arches, like retorts, insure that necessary high degree of heat by increassd draft and rapid combustion. The closed arches confine the burning fuel within the limits of a retort, and, acting by reverberation, concentrate the heat upon the burning fuel. By this system the heat is confined within the furnace a sufficient length of time for its complete absorption by the water surfaces instead of escaping in a wasteful manner up the chimney.

The volatile products of combustion, upon passing down through the fire, find a quick means of escape in the open passage between, and along one entire side of the arches, leading directly to the boiler, which short run under the grate bars in-

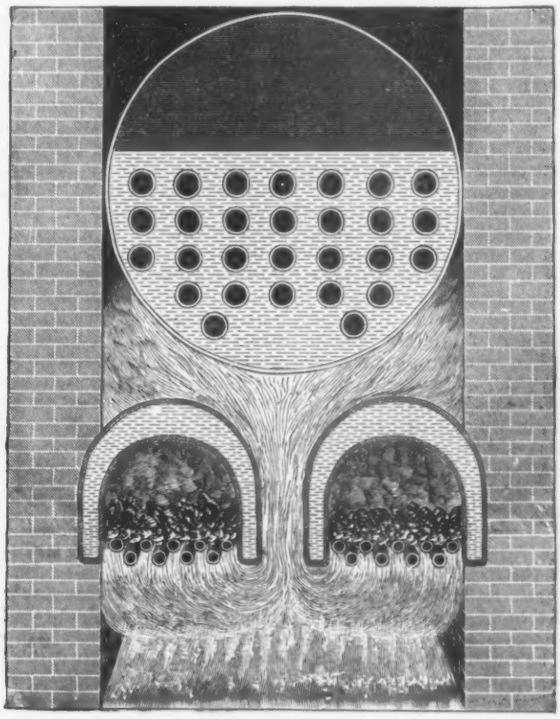


Fig. 2.—Transverse Vertical Section.

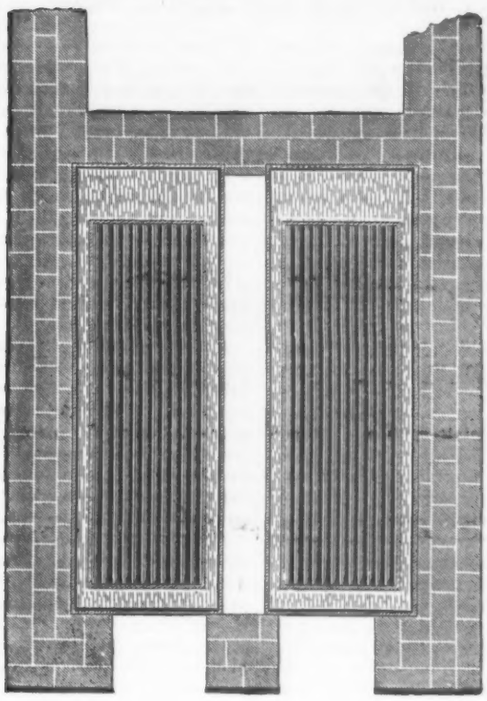


Fig. 3.—Sectional Plan View.

THE ORVIS DOWN-DRAFT FURNACE.

sures a rapid draft through the burning fuel.

The double arches permit the benefits derived from alternate firing; or, different grades of coal may be burnt simultaneously within each arch; and there is always a continuous flow of heat to the boiler from one furnace while the fire in the other one is being cleaned, thereby maintaining a uniform degree of heat on the crown sheets of the boiler and also preventing smoke at all times. These furnaces can be fitted to any boiler. They are made by the Orvis Brothers Down-Draft Furnace Company of 307 Dearborn street, Chicago.

A splendid piece of work has just been concluded in the *Zeitschrift des Vereines Deutscher Ingenieure*. It is a review of the technical development of the North German Lloyds and of the Hamburg American Packet Company by R. Haack and C. Busley, edited by Th. Peters, secretary of the society. It appeared in installments in the journal during the last three years, and illustrates by hundreds of engravings and an elaborate text the machinery and ships of the two German lines, tracing their development historically. We are glad to learn that it will be reprinted in book form.

Boston merchants earnestly resist the demand for an abrogation of the consular sealing law, as applicable to the Canadian Pacific and Grand Trunk railways, taking ground that the agitation of that subject is "gotten up and engineered by the representatives of the American trunk railway lines, who are endeavoring to suppress a competition which prevents them from dictating their own rates to their patrons both in the East and the West, and dividing the American territory between themselves, with not the least consideration for the needs of the American merchants and manufacturers."

Under the act of 1890 requiring the Secretary of the Treasury to buy not less than 4,500,000 ounces of silver every month at the current market price, 130,000,000 ounces troy, or nearly 5000 tons, have been bought, a part of it coined, and the remainder, weighing nearly 4000 tons, is piled up in Government warehouses. As the market has been steadily declining in spite of these large purchases, the people, outside of those interested in the deal, are over $100,000,000 out of pocket. In addition to this huge loss and waste of the public money, the accumulation makes it possible for gold to go to a premium, disturbing the standard of valuation and upsetting the markets in every direction.

There is money in refining sugar. Reciprocal treaties appear to have enhanced vastly the prosperity of this branch of business. The surplus earnings of the American Sugar Refining Company, which was originally organized as a trust, amounted during the last 11 months to a sum approaching $5,000,000. Adding to this the surplus of the previous year, the total surplus is upward of $6 500,000. It will be remembered that some of the refineries formerly independent were presented with the option of selling out on the terms offered, taking compensation partly in shares of stock or running the risk of being squeezed out.

The screw propeller ferryboats have thoroughly shown their superiority since the rivers filled with ice, this being the first experience of the new boats on the Pennsylvania route across the Hudson River. While other boats are liable to have their wheels clogged and labor so hard that they are occasionally delayed to raise steam, the submerged propellers experience no difficulty whatever, and run nearly on schedule time. The large screw steamers on the Sound have done equally well.

The Chicago, Rock Island & Pacific Railway Company have just issued a new through freight tariff book of 261 pages, covering rates from Chicago and its vicinity to all points in the West, Northwest and Southwest. We have also received from the same company a copy of the Western classification in full, but in miniature form, of date January 1, 1893.

A mammoth lumber combination is said to have secured some 300,000 acres of timber land in various parts of the country and to control practically the entire business.

Specimen Tests of Eye Bars.

One of the recent issues of the proceedings of the American Society of Civil Engineers contains an elaborate paper by Frederick N. Lewis entitled, "The Results Obtained from Tests of Full-sized Steel Eye Bars," from which we take the following: We have two related facts, viz.: 1, in spite of the fact that practically every bar gave a lower ultimate strength in full-sized test, and some of them lost largely, yet each full-sized test gave figures which were acceptable to the engineer; and, 2, the large losses occur generally in conjunction with high figures in specimen tests, while the small losses occur in conjunction with lower figures. These two points constitute a major and a minor premise on which to base a conclusion. Or rather they admit of two conclusions, one or the other of which must be verified by further consideration. Thus there is the very easy and obvious conclusion—(A) that we have only to use steel with low tensile strength and the large losses will disappear; and then there is the less obvious but more probable conclusion—(B) that the tests which gave high figures in specimen tests were less reliable than the ones which gave low ones, and did not in fact represent the mean value of the material.

If conclusion A were correct we ought to find (from the rate of progression indicated above), at about 56,000 to 58,000 pounds tensile strength, a grade of steel which would be practically a stable quantity. This is not only very unlikely from our general knowledge of how steel is affected by work and heat, but is refuted by such tests as we have of steel bars of lower tensile strength. From a practical standpoint we know also that the softer metal is much more apt to have blow holes in it, and would consequently forge less satisfactorily.

Conclusion B, however, has much to commend it, because there are very good reasons why test pieces should generally give figures in excess of the mean or normal value of full sized sections. A little cold rolling would produce this result in a test piece, and very often does so, especially in thin bars. Then it must be remembered that test pieces usually represent the best "cut" of the metal (if such a term may be borrowed from the shambles). It is a well-known fact that tests cut from certain parts of the cross section will give figures which are considerably higher, both in ultimate and in elongation, than tests cut from adjacent parts of the section. Moreover, the position of this "best" metal is definitely known, and there can be no doubt that our tests usually represent it, and consequently give results which are generally in excess of the average value of the full cross section.

On the other hand, while it is reasonable to suppose that specimen tests may sometimes give too low values, such tests are likely to be few and their discrepancies small. Thus, if the test piece were not entirely sound the result would be too low; and so also it would probably be if the metal had been finished too hot in rolling. Clearly, however, the effect of these things could not be much in tests which would be considered satisfactory, a limitation which at once checks too low values. For these reasons the writer thinks conclusion B is the correct one, and argues that the reason why the bars which gave high figures in specimen tests show large losses is because the specimen tests were too high; and that the tests which gave low figures in specimen tests are normal or occasionally a little too low.

This we may call the first element in the losses in eye-bar tests—too high values in specimen tests. The error is an undesirable one, since we are deceived by it, but it is clearly one which we can measurably control, by making a sufficient number of tests to get fair average values of the full sections, and by occasionally annealing specimens which are likely to have been cold rolled. Incidentally, however, it is to be noted as creditable to the steel makers that a careful consideration of the facts shows quite a little of the irregularity to be due to accidental causes, and that the real quality of the material throughout the series is actually nearer the mean of the specification than appears on the surface.

A second element in the loss in eye-bar tests, and the one most generally recognized, is due to annealing. All steel bars are, of course, annealed after forging, and no one practically familiar with the matter would be likely to deny that this is important, or that it is desirable to do it thoroughly at a good uniform heat with slow cooling afterward.

The chief effect of annealing on the body of an eye bar is to soften the hard and tough outer skin, and this would no doubt reduce its strength materially. Our comparison of results, however, is not between an annealed and an unannealed eye bar, but is a comparison between a specimen test having two planed edges and the annealed eye bar; and on this basis both Table No. 4 and a number of tests in the identical series offer evidence that the loss is not large when specimen tests represent the normal or average value of the material. But whatever the losses may be due to annealing, it is to be noted that they are entirely legitimate and proper losses. The annealing is an important and valuable feature of the manufacture of eye bars, and any effect produced by it should be recognized and provided for in specifications. This point will be taken up again in discussing the practical deductions of the paper.

There remains a third element in these losses in eye-bar tests to be referred to, and it is the one which is the most objectionable—the bad feature in these losses. We may reckon 2000 or 3000 pounds decrease due to the too high results in specimen tests, and 2000 or 3000 pounds more due to annealing, and still not account for the losses which run up toward five figures. This third element, which, in the writer's judgment, is a feature of all large losses, is due to the two familiar facts: 1st, that in testing materials the fracture takes place at the weakest point; and 2d, that the range of values is likely to be greater in a long bar than in a specimen test. Hence, in testing a long bar we get a check on its uniformity—a most important matter, since homogeneous steel is the ideal metal, while a steel which is alternately hard and soft in zones ought to be excluded from structural works. Now, in testing a bar which is not homogeneous, the "weakest point" is simply the place where the metal is the softest; hence it is fair argument to hold that the figures obtained for elastic limit and ultimate strength in testing such eye bars simply gauge these functions in the softest places in the bar. When large losses appear we know, therefore, that there was one place in the bar which was considerably softer than the test piece, and we are free to guess whether or not there may be places which are much harder. Hence, such results will bear investigation.

The data on elastic limit, which have previously been referred to in a very general way only, are less readily dealt with than the figures for ultimate strength, since the frequent gains in full-sized tests embarrassed us. It has been shown above, however, that the large losses occur in connection with high figures in specimen tests, even more notably in the case of elastic limits than in the case of ultimates. There is good reason to believe that annealing reduces the elastic limit in the same way that it does the ultimate. Lastly, as regards the uniformity of the metal, there can be no doubt that the elastic limit is an excellent criterion.

Now, the ordinary determination of the elastic limit by the fall of the beam, in testing small specimens, is well known to be the least accurate of our determinations. The best eye-bar testing machines, however, when equipped with mercury gauges are believed to give quite accurate results. But, regardless of these considerations, it is only fair to conclude from the identical series of tests that it is an open question whether there is always a loss in elastic limits in full sized bars. In other respects, however, the elastic limit results agree with all the conclusions reached above as to the causes of loss in ultimate strength.

To summarize, therefore, we find the losses in ultimate strength in full-sized eye bars to be fully established as a fact, and to be due, if our view be correct, to a combination of three distinct causes, viz.:

1. Specimen tests which give results which are in excess of the average values of bars. This is the undesirable factor of these losses.

2. Annealing the eye bars. This is the legitimate and proper element of loss.

3. Non-homogeneous steel. This is the bad element in the losses.

As regards the size of the bars, there is not much evidence that it affects the results. Thus the average values in ultimate for eye bars in the identical series are as follows:

Area from	Per cent.
3 to 4 square inches, average value	96.2
4 to 5 square inches, average value	95.5
5 to 6 square inches, average value	98.7
6 to 7 square inches, average value	94.8
7 to 8 square inches, average value	93.1
8 to 9 square inches, average value	95.6
10 to 11 square inches, average value	93.1
16 square inches area	85.4

In several of the items the number of the tests is too few to constitute a good average, but there appears to be a little tendency to larger losses in the bigger bars. If this is true, it is doubtless due to a greater lack of uniformity, since annealing would affect them rather less than smaller ones, and cold rolling would also be less likely to occur. There is, however, no demonstration on this head, and this leaves us with the three factors enumerated above as the elements which enter into the losses in eye-bar tests.

But one of these elements—the annealing—is at all likely to be determined within definite limits; the others will vary quite irregularly. This is the reason, as stated at the outset of the paper, why the tests cannot be plotted into a line or curve, nor can we predicate in advance how much a bar will lose in value when tested in full section.

Practical Considerations.—The fact that there is a perfectly legitimate loss in ultimate to be expected in a comparison of eye bar tests with small specimens is by no means generally recognized. The results obtained in this regard have frequently been an issue between manufacturers and engineers. Those, too, who have recognized that these differences were likely to exist have been by no means clear in respect to the cause of them, or what latitude should be given to provide for them. If, as we now know, it is unreasonable to exact the same results that are obtained in specimen tests, must we then go to the opposite extreme, and hold the shops responsible only for the forging and annealing and the mills responsible only for specimen tests selected by their own agents and prepared and pulled on their own machines. Something very like this is frequently urged as the proper course, but it is to be hoped that

such a view will not prevail. We have already seen early in this paper that a majority of the specimen tests are inflated, and such tests under the conditions described above—which are the ordinary conditions—present few difficulties. The quality of our eye bars is now maintained by the full-sized tests which are exacted, and we ought to provide for them under definite requirements.

What these requirements shall be must hinge on the grade of steel which is to be used. As regards this, the majority of the steel eye bars which have been made in recent years have been required to show a mean ultimate strength in the specimen tests of 64,000 pounds, with an extreme range of from 60,000 to 68,000 pounds. The experience of the shops in forging this grade of material, as well as the large number of eye-bar tests which have been made, commends it as a thoroughly satisfactory quality of steel for the purpose, and probably better, all things considered, than any other grade of metal. It forges better than a harder steel and is less affected by small flaws, and it is sounder than softer metal. Adopting as a working basis, therefore, a steel of from 60,000 to 68,000 pounds, we can then proceed to deal with testing it in one of two ways. We can require the mills, in the first instance, to furnish enough specimen tests to demonstrate the fair average quality of the material and its homogeneity, and when this is done make full-sized tests to prove the forging only. Thus, if a specimen test shows but 60,000 pounds tensile strength, we are bound to accept it quite as readily as if it showed 64 000 or 68,000 pounds. But if we are to definitely accept the material, we are justified, in view of our analysis of the losses in eye bars, in requiring manufacturers to demonstrate that it is a *bona fide* result, and that there are not 2000 or 3000 pounds in it due to cold rolling, 2000 or 3000 more due to selection of the test piece, nor soft spots in addition to reduce its value still further.

Or, in the second instance, we can deal with the matter by considering specimen tests to be matters of information only, and accept or reject the bars solely on the results of full sized tests. This is probably the better way to deal with eye bars, because the only really efficient test of homogeneity is the large bar, and because also the test of the full-sized eye bar eliminates the elements which inflates specimen tests. Hence, by adopting the eye-bar test as the sole criterion, the manufacturer is required to use his ingenuity to get a genuine product rather than to get a good specimen test. In deciding on a proper requirement for the ultimate strength of full-sized bars, it is necessary to reckon on 60,000 pounds as a basis in specimen tests, because, as pointed out above, we must accept a *bona fide* result of 60,000 pounds just as readily as 64,000 or 68,000 pounds. Our judgment of what reduction it is reasonable to allow must therefore be deducted from a basis of 60,000 pounds. What this "reasonable deduction" should be will depend to a degree on the judgment of individual engineers, since it admits of only approximate demonstration. From study of the question and from the examination of a large number of eye-bar tests extending over several years, the writer is disposed to favor 4000 pounds as a proper allowance to make, or 56,000 pounds, accordingly, as the minimum requirement for ultimate strength.

Whether we should include a definite requirement for elastic limit or not is perhaps open to question. The elastic limit is a function which is but little understood. Manufacturers must to a great extent accept what they get, having little control of their product in this regard. There are excellent reasons for believing that the normal elastic limit of 64,000 pounds steel is above 35,000 pounds and is not much reduced by annealing. It is probably true, also, that those brands of steel bars which have commended themselves as the best in the market are characterized by a high elastic limit. But it is very doubtful if the manufacturers of these bars could explain why this is so or how they achieve these high figures. Different processes of manufacture, too, seem to give different values in elastic limits for the same ultimates. Hence, it may not unreasonably be argued that the results obtained for elastic limit shall be free from limitation. On the other hand, the importance of the elastic limit as a criterion of homogeneity affords a strong reason for limiting it in full sized tests. There are numerous tests on record which show losses in elastic limit of 10,000 to 12,000 pounds, the results in eye-bar tests running down to 30,000 pounds per square inch, or even in some cases as low as 28,000 pounds. In the writer's judgment such bars should be ruled out, and a minimum limit is necessary to do this, and is probably advisable. It should not, however, if adopted, exceed 32,000 pounds, since really good results are on record with elastic limits below 34,000 pounds.

If, as suggested, we are to accept or condemn eye bars on full-sized tests, it will be necessary to make such tests for each melt of steel represented, as well as for the different sizes of bars. This means an increased number of tests (which are not, however, expensive), and if not looked after might lead to excessive testing. By requiring the manufacturers to limit the number of melts used in making the order, this could, however, readily be kept in check, and the number of bars need not exceed four or five per hundred as an average.

A Defect in Copper Pipes.

The high pressures now in vogue in multi-cylinder expansion engines have developed a defect in brazed copper pipes that is attracting the attention of engineers, and the remedy for which will have to be supplied. The defect is found in the brazed joints, which, while under steam pressures formerly carried were strong enough, are now found to be strained so nearly to their limit as to introduce an element of danger. A number of instances of the bursting of copper pipes have occurred, with injury to persons, in some cases loss of life. That the danger is not so small as to be neglected is proved by the fact that at meetings of engineering associations it has been of late quite frequently the subject of discussion, and carefully prepared papers have been presented to such bodies, setting forth the evil, its causes and the remedy. The causes assigned for the weakness are the burning of the copper in the brazing process and improper or insufficient beveling. Burning the copper while brazing causes flaws in the sound metal and weakens the beveled edges. This burning can be avoided with skill and care, and as it is the principal source of the trouble when the joined edges are properly beveled, the operation should be intrusted only to a skillful, careful workman. But too often the beveling is not properly done. Both the inside and outside lapping edges should be beveled. It has been the practice in some shops to bevel only the outside edge. The result of this, in use for high-pressure steam, is that the thick inside edge is forced into the metal of the outside edge, and as the pipe has only the strength corresponding to the thickness thus reduced, there is a tendency to give way in a line immediately overlying the inner unbeveled edge, and to form a longitudinal crack. There should be a bevel on both edges; but this does not imply that there should be a long, thin taper and a wide overlapping; the danger of burning is increased by making the bevel too thin and tapering. It appears to be the opinion of the highest authorities that the bevel should be of medium breadth and that the requisite uniformity of bevel can only be acquired by machine tooling. It is conceded that in this way, with careful selection of material, aided by a more careful attention to the brazing process, copper pipes may be made as strong in the brazed seams as at any other part. In marine construction there is much copper work in which solid drawn pipes cannot be used, on account of the special forms required. Even if they could be used they are not always found to be more reliable than brazed pipes, although for many purposes they are far preferable. Socket joints should be avoided as much as possible. They should not be used in the vicinity of bends, and when their use is absolutely necessary the greatest care should be given to the work. Brazed flanges should be of liberal thickness, and the pipe should be well fitted to and well entered in openings of the flanges before brazing.

An Electrical Forging Factory.

Letters of incorporation were granted at Springfield, Ill., on the 13th inst., to the Illinois Electrical Forging Company of Chicago with a capital of $2,000,000, Walter G. Campbell, John P. Skinner and Thomas Cratty being the incorporators. Although the company is a stock company, there is no stock for sale. Walter G. Campbell is the principal owner, having purchased the State rights from the Electrical Forging Company of Boston.

The object of the company is the heating and forging of metals in all forms, the smelting of ores, the cooking of food, the heating of buildings and other attainments by the use of electric heat. A factory has already been built at West Pullman, at 121st and Peoria streets, for the manufacture of tools and miscellaneous articles. It is of brick, 50 x 250 feet, and three stories high. The machinery is being made in Boston and in Chicago. The patents are made out to George D. Burton and E. E. Angell. At the beginning of work an engine of 1000 horse-power will be put in, but this will be replaced.

The advantages claimed for electrical forging are economy of space, fuel, time, labor and material. Mr. Campbell expects to have the factory in full working order by May 1 Space has been granted at the World's Fair for an exhibit of electrical forging, which, it is said, will revolutionize the system.

The monster pump at the Chapin mine, at Iron Mountain, Mich., recently put in position, will enable that mine to handle almost any amount of water that may by any possibility get into the workings. This is the largest mining pump in the West, and is a magnificent piece of mechanism. It has a lifting capacity of 200 tons of water per minute from a depth of 1500 feet, and will be able to rid the mine of water at the rate of 4,000,000 gallons every 24 hours, should occasion arise. This pump has been put in to insure the mine against interruption of work from inflows of water such as occurred in the Hamilton and Ludington mines last year, its capacity being considerably in excess of the present requirements of the mine. It was built by the E. P. Allis Company of Milwaukee.

The statistics relating to car building, which were referred to editorially in a recent issue, were compiled by the *Railroad Gazette* of New York.

WORLD'S FAIR NOTES.

A Government Standard Measure of Length.

T. C. Mendenhall, Superintendent of Weights and Measures, United States Coast and Geodetic Survey, has arranged for an interesting exhibit from a scientific point of view. Desiring to secure a standard measure of length, he has ordered from the Illinois Steel Company a bar of steel 50¼ feet long, 2 inches wide and ½ inch thick. This will form a so-called bench standard, which will be particularly useful for the comparison of steel tapes used by engineers. It was desirable to have this standard in a single bar, instead of two or more pieces, so that the execution of the order will be a nice piece of work. It will be rolled at the Milwaukee Works of the Illinois Steel Company and will afterward be planed smooth on all sides by the E. P. Allis Company. It will be placed in the Government Building on the exposition grounds.

What Exhibitors Will Have to Pay.

The rates that will be charged exhibitors for light, water and all kinds of power were practically fixed last week at a special meeting of the exposition directors.

It is now possible for exhibitors to estimate the exact cost of making their displays—a thing they have not been able to do until the rules were published. Loud calls have lately been made for these rules, and because they were not issued many firms that intended to make displays withdrew from the fair. The opinion obtained to an extent that the directors of the fair were holding back the prices they intended to charge with the idea of collecting exorbitant rates after exhibits were located in the buildings. This impression was wholly erroneous. The delay in issuing the scale of prices was due to a difference of opinion between Director-General Davis and Chief Burnham as to which should execute the rules. So far as the rates to be charged are concerned, the prices might just as well have been announced two months ago, for the scale adopted by the National Board last October is practically unchanged. A few concessions in the way of prices were made, but in the main the rates remain the same.

An important section of the rules and one in which nearly every exhibitor at the fair will be interested is that setting forth the course to be pursued in getting different kinds of power, gas, light or water. This section reads as follows:

> Exhibitors desiring to contract for service of electricity, steam, compressed air, power from shafting, gas or water, must make application to the chiefs of the departments in which their exhibits are installed. No application will be entertained unless made upon a blank furnished by the chief of department; and when an application has been approved by the Director-General a contract will be executed on the part of the World's Columbian Exposition by the Director of Works, if practicable, on the terms set forth in the rules. In no case will service be furnished except under authority of contract in writing, the payments for which shall be made by the applicant to the World's Columbian Exposition at the time of the execution of said contract.

In all cases the supply of power, &c., will begin May 1 and end October 30. It is agreed that a limited quantity will be furnished free. For instance, a certain number of electric lamps will be hung in all the buildings. These are supposed to illuminate the aisles and exhibit spaces. If any exhibitor wants his section more brilliantly illuminated, he can get all the lights he wants by paying for them. The same principle applies to power to operate machinery. The Exposition Company will furnish free of charge enough power to start an unloaded machine. If the exhibitor wants to put the machine to the test of turning out a certain product—in other words, loading it—he must buy the additional power.

The rate for each incandescent electric lamp of 16-candle power for the period of the exposition is $8. The Westinghouse system is used, and wiring, which is done at the expense of the customers, will be under the direction of Mr. Burnham's men. State buildings and national headquarters are to be wired by their own boards on plans approved by the Director of Works.

The charge for connecting motors with the main supply line varies from $10 to $15, according to the power used. The rates for electric power, after connections have been made, are as follows per horse-power:

For ¼ horse-power and less	$20
For more than ¼ horse-power and not exceeding ½ horse-power	40
For more than ½ horse-power and not exceeding 1	75
For more than 1 horse-power and not exceeding 2	70
For more than 2 horse-power and not exceeding 3	60
For more than 3 horse-power	50

The charge for electric lamps of 2000 candle-power is $60. The rate for steam power is $40 per horse-power. The rate contemplates continuous service, or power that can be demanded at any time at the option of the consumer. Those requiring power for a few hours only each day will be charged at the rate of 4 cents per horse power per hour. The hours that this extra power will be furnished are to be determined by the chiefs of departments.

Compressed air is more expensive, the rate for that being $60 per horse power for the period of the exposition and 5 cents per hour per horse-power when used at irregular intervals. Power from shafting is listed at $60 per horse-power. The following rates for electric power in electricity building were agreed to:

For one-quarter horse-power and less	$15.00
More than one-quarter horse-power and not exceeding one-half horse-power	30.00
More than one-half horse-power and not exceeding one	50.00
More than one horse-power, not exceeding two, per horse-power	45.00
More than two horse-power and not exceeding three, per horse-power	42.50
More than three horse-power, per horse-power	40.00

An important provision of the rules relating to all kinds of power is that exhibitors who want to operate their machines but one or two hours a day can do so without paying for power all the time. This was different in the old rules and many complaints were made in consequence. Under the new order of things, department chiefs fix several hours each day when exhibitors who want to operate their machines can do so. The rate charged for this service is about 4 cents an hour per horse-power.

Assignments of Space.

Chief Allison of the Department of Manufactures being too ill to continue the allotment of space in his building, Director-General Davis assumed charge of the office on the 9th and decided to close up the business within the next few days. He called about him Chiefs Skiff, Buchanan and Smith, and Assistant Chief Hornsby of the Department of Electricity, and each was given one or two groups in which to make the assignments. The Director-General and the four chiefs, with Assistant Chief Williams of the Manufactures Department, met shortly after and allotted space with a great degree of rapidity.

"There will be no cessation of this work until the space is all awarded," said Col. Davis. "Mr. Allison is too ill to continue the work, and it has become a necessity to push it forward. Before the end of the week there will be no space left unassigned in the department."

Chief Robinson of the Machinery Department has cleaned up everything in his building, with the exception of a few thousand square feet, which will be retained for emergencies.

The foreign countries are ahead of domestic exhibitors from the fact that their space was awarded many months ago to commissions representing the several governments. Domestic exhibitors have been less fortunate because of their great number and the desire to discriminate fairly between their applications. When Chief Robinson closed his office last Thursday evening he had ruled out 500 of the 1200 applicants for space. In the manufactures department the eliminations will be much greater; not more than one in eight will receive an allotment.

Allotments in the mines, electricity, agriculture, horticulture, forestry, live stock and fine arts are also practically made.

"L" Road at the Fair.

The standards for the elevated electric railway at the World's Fair grounds are all in place. A force of eighty men are now engaged in putting up the beams, and by February 1 the entire road will be ready for track laying. Within 30 days the first train will be running over a part of the road, in an experiment as to equipment and speed. By April 1 the railway will be in active operation, as it is estimated that Jackson Park will contain a population of 10,000 people by that time engaged in the work of preparation for the opening.

The foundations for the Power-House and Office Building are in place, just southwest of the Forestry Building, and work on the superstructure has begun. The news of the early completion of the elevated road will be received with much satisfaction by the small army of fair employees who have been tramping to their offices through a mile or more of snow from the nearest railway station.

The cars for the first train are nearly completed at Wilmington, Del. They are open summer cars, with two trucks and eight wheels and a carrying capacity of 100 passengers each. The motor cars will also have eight wheels, with power applied to each wheel, and will carry passengers.

It is estimated that trains will run over the road 12 miles per hour, including the ten stops in the full run of three and a half miles. The stations will be covered platforms, with stairways leading to the tracks above. Tickets will be collected at the stairways, the same as on ordinary elevated roads.

Outside the standards, which are of wood, the construction will be practically the same as the Alley "L," except somewhat lighter. The electric wires or trolleys will run alongside the tracks, and not above in the usual way of the trolley system.

The company constructing the novel railway is the Western Dummy Railway Company, and was organized solely to build this one road as an experiment. Twenty-five per cent. of its gross receipts will go to the exposition. The fare charged will be ten cents, long or short haul.

The Boilermakers' Fight.

A bill for an injunction against the World's Columbian Exposition was filed in the Superior Court at Chicago on the 9th inst. by the Babcock & Wilcox Company of New Jersey. The bill sets forth that the complainant, one of six firms of boilermakers known as the Temporary Association, received a contract for boilers from the World's Fair. The companies of the Temporary Association make boilers

of a certain approved type, and the device of any one of the firms may be safely used in connection with the devices of all others. The six firms are the Abendroth & Root Mfg. Company of New York, the Campbell & Zell Company of Baltimore, the Stearns Mfg. Company of Erie, Pa.; the National Boiler Company of New Brunswick, N. J.; the Heine Safety Boiler Company of St. Louis, and the complainant company of New Jersey. The complainant, under the impression that only the six named companies were to construct boilers, having been awarded a contract, deposited a bond of $10,000 for the satisfactory performance of the work and expended a large sum of money in pursuance of that contract. Now it is informed that the Stirling Boiler Company, maker of another type of boil ers, is to be allowed space for boilers of that type, and the complainant company demurs against this action of the World's Fair on the ground that it increases the complainant's risks under its bond and establishes a condition under which the Babcock Company would not, knowing it to exist, have offered to bid for work. Therefore the complainant pravs that the defendant, the Columbian Exposition representatives, be enjoined from allowing the Stirling boilers to be put in.

On the 12th inst. Harlow N. Higinbotham, President of the World's Fair, filed his answer to the bill of the complainants, in which he places the matter in a different light. In the first place Mr. Higinbotham repudiates the Temporary Association, and denies that any contract was made with the companies of that association to the exclusion of other companies. Mr. Higinbotham denies that the World's Fair ever assured the firm of Babcock & Wilcox that it should be allowed to furnish all additional power required for the main steam plant or an exclusive right to put in boilers. It is admitted as a fact that the Babcock & Wilcox Company were awarded a contract in May to put in 10 boilers for certain rentals, but it is further alleged that the company have failed to meet the terms of the contract, which specified that the boilers were to be in place by September 1 and ready for continuous service after September 15, and it is averred that the apparatus is not even now ready for service. Concerning the allegation that Chief Engineer Sargent contracted with the complainant company for additional steam capacity, the answer declares that the power to make awards rested in the Council of Administration and in no other body whatever.

Of chief importance, however, is the reply of President Higinbotham concerning the conditions under which the Babcock Company is allowed to put in its boilers. The answer states that they were accepted and assigned space simply as exhibits, and that it would contravene the spirit and letter of the act of Congress creating the exposition to allow one company to exhibit and to exclude another equally desirable exhibit. The Stirling Company, declares the answer, applied for space for an exhibit upon the same conditions as were imposed upon the Babcock & Wilson Company, and their application was allowed. The claim that the introduction of Stirling boilers will bring an element of danger into the concern is denied on the ground that the Stirling device is not of perilous construction.

Judge Ewing referred the matter to a master.

Vehicle Men Pleased.

Work in the vehicle division of the transportation department is now completed. Supt. A. A Abbott of the vehicle division has finished the allotment of space and received acceptances and information for the catalogue from all exhibitors and turned the same over to Chief Smith, who has approved the work. The plats with the list and information and plans of allotment will be delivered to the Director-General for his approval, when the permits to occupy the space will be made.

The vehicle division is the first one of those in the department of transportation exhibits to be completed. The space applied for in this division amounted to 232,000 square feet, the amount allotted 90,000, and exhibitors seem to be well pleased. All applicants have been accommodated, although many have not received as much space as they would like. The special committee appointed by the Carriage Builders' National Association visited the city last October. After examining the floor of the building they recommended that it be covered with wood carpet with handsome borders on the boundary of each space. As there was no charge for space, they thought exhibitors could afford to expend something in fitting it up. The recommendation was received with hearty approval. A very handsome design of glass sign has been ordered by the department. It is mounted on metallic standards. These features will add very materially to the general effect of the exhibit and show up the goods to the best possible advantage, the details of which are looked after by the chairman of the committee, C. Frederick Kimball of Chicago.

Miscellaneous.

The Galloway engine to be used for driving the machinery in the British section is to be supplied by Messrs. Galloway of Manchester. It is of horizontal superposed compound condensing type, and is to indicate 70 horse-power at 70 revolutions per minute with 100 pound boiler pressure. The high-pressure cylinder is 17 and the low pressure 30 inches in diameter, both having a stroke of 3 feet 9 inches.

Secretary Hirst of the installation department received notice of the shipment of a model of a modern steamship from the great shipbuilding firm of Furnace & Co. of West Hartlepool, England, and a quantity of ores from Mexico.

Space has been allotted the Consolidated Mfg. Company of Philadelphia to show a model brush factory in operation. Ten or twelve brushmaking machines will be set up, so as to show the making of brushes in all its branches.

The unexampled development of the advocation of electricity for street railroads is well shown in the statistics compiled by the *Street Railway Journal*. During the year 1892 there was an increase in the mileage of electric roads of 1878 miles, a decline of 842 miles in the horse roads, a gain of 52 miles in cable roads, and a decline of 22 miles in steam dummies, thus showing how largely horse railroads have been converted into electric lines. At the close of last year there were in operation in the United States 11,665 miles of street railways, the motive power being distributed as follows: 4460 miles horse; 5939 electric; 646 miles cable and 620 miles steam. The number of cars in use has reached the large figure of 38,400, which is nearly 15 000 in excess of the number of passenger cars in steam railroad service. It is stated that the investment in electric roads during 1892 has been probably not far inferior to that in railroad extensions during the past year.

J. F Loy, chief engraver at the Ithaca Gun Works, with his assistant, S. S. Rogers, has just completed two remarkably handsome guns. The barrels are of Damascus steel, the stocks of English walnut and the engraving and inlaying of precious metals are of the most elaborate and costly order. They are valued at $250 each.

THE WEEK.

Spring floods threaten to be more than usually destructive.

More ocean vessels are to be built for the lakes. Captain Gilbert, the manager of Harrison H. Wheeler's shipyard at Bay City, Mich., is in Pittsburgh, to purchase steel beams and other structural work to be used in the construction of three large steel steamships to be turned out of the Wheeler yards during the coming year. These three steamers will be of the freight-carrying class, and will approach the ocean steamers. The three new ships will be 400 feet in length. They will have a beam of 42½ feet and 27 feet depth of hold. The average tonnage of the largest lake vessels at present is 3000 tons; these new steel vessels will have a carrying capacity of 3800 tons each. They are expected to maintain an average speed of 14 miles per hour.

A trans-Pacific cable is to be built at once. A contract has already been entered into between the colony of Queensland, Australia, and La Société des Telegraphes Sousmarine for a cable from Brisbane, the capital, to New Caledonia, Fiji, Samoa and the Sandwich Islands. The idea of the promoters is to extend it to America. The company have the option of making the terminus at San Francisco or Vancouver. The estimated cost is $10,000,000.

Asbestos mines in Wyoming are being opened, but the product is not claimed to be equal in quality to the supplies from Canada.

New York now has a boss stevedores' trust.

The grain blockade first noticed in Kansas and Duluth is now severely felt in St. Louis, where the accumulation of wheat is about 8,000,000 bushels. The slack foreign demand and consequent low prices account for the phenomenon.

The Pacific Mail Company have issued an announcement at San Francisco that a permanent cut in rates of 50 per cent. will be made on all freight per steamer of the 18th inst. to Central American ports. This cut is brought about by the competition of the new Spanish-American line.

A Cuban dispatch says that the Spanish Government insists upon the payment of export duties on sugars, regardless of the treaty of reciprocity with the United States, and trouble is predicted.

The Dominion Government will spare no effort to obtain emigrants from Europe during the coming season.

Nearly five-sixths of all the corporations formed in Mexico for the prosecution of various enterprises requiring an investment of capital are American. Only three years ago Englishmen had the lead. Last year the capital represented by new companies was over $90,000,000.

Authority has been given for the erection of a new pumping station near Washington Bridge for the supply of water to the upper part of this city, west side. The tower will be 175 feet high. Three large pumping engines will be set up, having a capacity of 20,000,000 gallons a day, and the tower of 4,000 000 gallons—total daily capacity 24,000,000 gallons. The entire estimated cost is $500,000.

Builders of steamships at lake ports must take a costly lesson from experience. There is no longer any doubt that the loss of at least two of the largest steel steamers built by them is due to serious faults in construction which developed weakness amidships. More evidence to this effect is coming to light. The steel steamer "Maritana" of the Minnesota Steamship Com-

pany, built and launched at Calumet last summer, was towed into the shipyard of the Globe Iron Works at Cleveland, where experts found that the boat had narrowly escaped breaking in two. Hundreds of rivets were gone and steel plates were separated as much as ½ inch in many places. The steamer will be repaired at a cost of $75,000.

The New York municipal authorities propose to move speedily in carrying out the plans for the construction of a new city hall in the park. A new building in the modern style, comprising a large quantity of iron beams, girders and posts, would naturally endure for centuries, and at first thought the location chosen would seem to be very far down town. But a century hence the City Hall Park will be much more central than now with reference to population on Long Island and other environs geographically within the corporation limits. Between the two great contemplated improvements—the new city hall and rapid transit—the municipal treasury is likely to be well drained.

The American Federation of Labor, in session at Albany, recommend that all machine labor in State prisons be abolished, also the system of convict labor in State prisons. The latest report of the State prison officials fails to show that the efforts made thus far to abolish machinery and to restrict the labor of convicts have had any effect to reduce the burdens of the taxpayer, or to promote the welfare of the convict, but quite the reverse.

In response to inquiries made by the Canal Committee of the New York Board of Trade and Transportation, Horatio Seymour, ex-State Engineer and Surveyor, has sent an elaborate discussion on the question of a ship canal between the lakes and the Hudson, with the conclusion that it is impracticable. He estimates the cost of the canal at about $600,000,000 and describes the difficulties in the water supply as unparalleled in canal construction heretofore.

Chancellor McGill of New Jersey issued a decree for the appointment of a receiver for the Jersey Central Railroad because it ignored the order of the court to withdraw from the coal combine. The decree is held in abeyance pending an inquiry by a master in chancery.

The Panama Railroad may yet be under American control, according to dispatches from Washington, depending on the success of negotiations said to have taken place between an agent of the Treasury Department and President Nunez of Bogota. The explanation is made that so many shares of the stock of the railroad are at the disposal of the receiver of the canal company that the Pacific Mail Steamship Company, backed by the Gould-Huntington interests, feel confident that in the end they will come into possession. The canal franchise having been forfeited, President Nunez is vested by the Congress of Colombia with full power of action.

A bill to make the records of the Interstate Commerce Commission and certified copies of them *prima facie* evidence in courts of law was favorably reported to the House from the Committee on Commerce. This provision was neglected when the Interstate Commerce act was passed, and copies of the records have only been admitted in evidence by consent of counsel.

The Deep Waterway Convention at Washington completed its work on Friday, forming a permanent organization to continue the agitation in favor of a ship canal on American soil, to connect the great lakes and the Atlantic. Resolutions were adopted urging the passage by Congress of the bill providing for the necessary surveys.

Detroit merchants are securing pledges to the amount of $125,000 for a chamber of commerce building.

Only one full-rigged ship was built in Maine last year.

The financial crisis in Australia seems to be more acute. Failures are numerous.

Mr. Scott of the Union Iron Works in San Francisco has full confidence in the ability of the Pacific Coast to compete successfully with any other part of the country in iron shipbuilding, whether for the navy or mercantile purposes. One special advantage is the mildness of the climate, which permits work at all seasons. Mr. Scott says: "We also manufacture every thing at our yards that goes into the ships except the plates, which are not made at any of the yards. Our facilities, too, are superior to most of the yards in the East. The disadvantages we have are that the plates and armor plates have to be shipped from Pennsylvania, but we can build ships as rapidly as they can here."

A bill creating a Department of Transportation and providing for the construction of a Nicaragua ship canal has been introduced in the House by Mr. Otis. The department is to have general supervision of the carrying trade of the entire country and to exercise all the powers of the Interstate Commerce Commission, which is abolished. On his appointment the secretary of transportation is to name a commission to proceed to Central America to inspect the work done by the Maritime Canal Company and report what treaties, &c., are necessary to give the United States full control of the Nicaragua Canal.

A large amount of structural iron will be used in what is known as the Park avenue improvement above 106th street, where the tracks of the New York Central railroad will be sustained by an elevated structure. Including the drawbridge over the Harlem River the cost will be about $4,000,000. The contract for the cast iron bases, made with the Allentown Foundry & Machine Company, alone amounts to $16,656.

Extreme depression prevails in the shipping industry of England and the Continent. The total number of vessels laid up at English and Scotch ports is 479, and the total tonnage is 856,000 Besides these, there are laid up in Continental ports 99 steamers, with a total tonnage of 100,000.

The final estimates of the yield of cereals for the year 1892, just completed by the Department of Agriculture, gives the following results:

	1892.	1891.
Wheat	515,949,000	611,780,000
Corn	1,628,464,000	2,060,154,000
Oats	661,035,000	738,394,000
Totals	2,805,448,000	3,410,328,000

The wheat crop is thus declared to be almost 16 per cent. less than in the preceding year, the corn crop is over 20 per cent. less, and the oats crop is over 10 per cent. less. It will be remembered, however, that the year 1891 was the most remarkable for cereal production this country has ever known. Iowa and Kansas are the two leading States, the former producing over 200,000,000 bushels of corn, while Kansas boasts of nearly 71,000,000 bushels of wheat. As corn States Nebraska, Missouri and Illinois are not far behind.

The Canadian Minister of Finance, Mr. Foster, is untiring in his efforts to improve trade relations with England and France, from which countries he recently returned. Previously he visited the West Indies, with a similar purpose, hoping to recoup any shortening of trade through the operations of the United States tariff. Besides visiting Paris he reports that he "initiated several bases of action in connection with our commercial agents in Great Britain, which will have the effect of bringing in closer touch Canadian sellers and British buyers, thus augmenting the necessary trade with Great Britain. I found a very lively interest on the part of dealers there in the products of Canada and the possible chances of trade being done therein."

The Commissioner of Navigation, in reply to a circular sent out by him asking for information, represents that the shipping interests of the country, so far as the foreign trade is concerned, are in a desperate condition. He therefore urges the necessity of measures for its restoration and advocates the establishment of a mercantile marine and naval reserve on the principles established by Great Britain. This suggestion seems to meet with a general favorable response.

Southern Pig Iron Freights.

The Queen & Crescent route has issued supplement No. 4 to East-Bound Pig Iron Tariff No. 3, effective January 2, giving the rates on pig iron in carload lots from Southern furnaces to Boston, New York, Philadelphia, Baltimore and points east and north of a line drawn from Buffalo, N. Y., to Bristol, Tenn., thence to the Atlantic Coast. The rates of some of the more important points are given below:

To	From— Chattanooga, Dayton and Rockwood, Tenn.	Rising Fawn, Ga., and Fort Payne, Ala.	Birmingham district.	Decatur, Florence and Sheffield, Ala
Connecticut.				
Bridgeport	*4 90	5.0.	5.01	....
Delaware.				
New Castle	*4.40	4.50	4.50	....
Massachusetts.				
Boston	*4.90	4.86	4.86	....
New Hampshire.				
Concord	5.90	6.15	6.40	6.15
New Jersey.				
Camden	4.43	4.68	4 68	..
Jersey City (rail and water)	*4.05	4.01	4.01	...
Trenton	*4.56	4.81	4.81	....
Vermont.				
Burlington, Montpelier.	5.90	6.15	6.40	6.15
New York.				
Albany	5 60	5.85	5.85	5.95
Attica	4 40	4.65	4.90	4.65
Auburn	4.70	4.95	5.20	4.95
Binghamton	5.30	5.55	5.80	5 55
Elmira	4.69	4.94	4.94	5 04
Glens Falls	5.90	6.15	6.40	6.15
Hoosick Falls	6.00	6.25	6.25	6.35
Ithaca	4.90	5.15	5.70	5.15
Middletown	5.35	5.60	5.60	5.70
New York (rail and water)	*4.05	4.01	4.01	...
Painted Post	*4.70	5.15	5.40	5 15
Rochester	4.40	4.65	4.90	4.65
Rome	5.15	5.70	5.65	5.40
Syracuse	4.70	4.95	5.20	4.95
Troy	5.60	5.85	5.85	5.95
Utica	5.15	5.40	5.65	5.40
Watertown	5.70	5.95	6.20	5.95
Pennsylvania.				
Allentown	4.50	4.61	4.61	....
Bellefonte	4.56	4.81	4.81	4.91
Bethlehem	4.50	4.61	4.61	...
Birdsboro	*4.21	4.31	4.31	...
Catasauqua	4.50	4.75	4.75	...
Chester	*4.21	4.31	4.31	...
Dunbar	4.20	4.45	4.70	4 45
Easton	4.50	4.61	4.61	....
Harrisburg	3.67	3.77	3.77	....
Lancaster	*4.06	4.16	4.16	...
Lebanon	*3.96	4.03	4.06	...
Lockport	4.65	4.90	4.90	....
Nicetown	*4.21	4.31	4.31	...
Philadelphia (rail and wat'r)	*4.05	4.01	4.01	...
Philadelphia (all rail)	*4.35	4.31	4.31	....
Phillipsburg	4.56	4.81	4.81	....
Pottsville	*4.40	4.55	4.55	....
Reading	*4.21	4.31	4.31	...
Scranton	4.84	5.09	5.09	5.19
Steelton	*3.86	3.96	3.96	....

* Dayton and Rockwood only.

The Iron Age

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Lake Superior Ore in 1892.

In spite of serious drawbacks, the last year has achieved the distinction of being the banner year in the history of the Lake Superior iron ore trade. The total shipments by water and rail, reported by the *Iron Trade Review*, were 9,074,243 gross tons, against 9,003,701 tons in 1890, the greatest preceding record, and 7,057,078 tons in 1891. To the ore interests there may be some mournful satisfaction in this achievement, which is for them, unfortunately, coupled with the ugly fact that they are known to have entered the new year with a very heavy load of unsold ore on hand.

It is stated that the bulk of the ore which was carried over to this year was non-Bessemer, a statement which the course of events would seem to support. The future for those mines which produce only non Bessemer ore looks rather dubious. The demand is being lessened by the rapid decline of puddling, so that the quantity of gray forge marketed is falling off in spite of low prices. For foundry work, the Southern competition is telling.

Exactly what the proportion of non-Bessemer ore constitutes of the whole output of the lake ore ranges has never been authoritatively stated, so far as we can learn. It is therefore practically impossible to estimate how much pressure this diversion from puddled iron to soft steel might have put upon the mines producing Bessemer ores either exclusively or largely. The question would be one for serious consideration were it not for the fact that the new range, the Mesaba, promises to fill any requirements. Unless accidents occur which take one or more large producers out of the active list the supply promises to be more than ample for all purposes, and prices will remain low. The non-Bessemer ores will suffer from a restriction in the demand, and the mines are burdened with large stocks. The Bessemer ore producers must contend with their latest and formidable rival.

So far as the records for the past year go, the shipments by ranges stand as follows:

Range.	Shipments. Gross tons.
Gogebic	2,973,903
Marquette	2,666,856
Menominee	2,261,499
Vermillion	1,167,650
Mesaba	4,245
Total	9,074,243

It will be seen, therefore, that the Gogebic range, producing soft Bessemers exclusively, now takes the lead. The shipments by ports have been as follows:

Port.	Shipments. Gross tons.
Escanaba	4,010,085
Ashland	2,223,683
Two Harbors	1,165,076
Marquette	1,026,338
Gladstone	115,886
Superior	4,245
All rail	528,930
Total	9,074,243

The developments during the current year will be watched with keen interest, since it will put to the test the ability of the different districts to meet low prices. It is likely that some of the features will be developed which are characteristic of mining generally. The weaker concerns will cut off a good deal of dead work, will stop development and resort to robbing their mine to keep alive, an example which even stronger corporations are apt to resort to in times of heavy pressure. The latter, however, will probably secure economies in many directions which will materially and permanently lower cost. It is to be hoped that this can be achieved without resorting to a lowering in wages.

Electric Power on the Canals.

Possibly the problem of increasing the efficiency of the State canals is approaching a solution. The best engineering talent employed thus far has made successive advances toward the end desired, but all devices, whether of enlarging locks, increasing the depth of water or introducing steam propulsion, have proved unequal to the task of successfully competing with hostile railway managers. Steam has accomplished much, and has been attended with a measure of success warranting continual additions to the fleet. A dozen new boats of this description will be brought out the coming spring. But the difficulties to be surmounted are so formidable that every endeavor must be made to overcome them. The boatmen now complain bitterly, not only that elevator charges are exorbitant, and port charges and terminal expenses of all sorts oppressive, but that both in New York and Buffalo they are being crowded literally out of the water. On the East River, piers that formerly were reserved for their exclusive use are now invaded by other craft to an embarrassing extent, and in Buffalo the entire lake front is being bought up by railroad companies for their exclusive purposes, monopolizing all docking facilities, for the purpose of locating storage towers and floating grain elevators. Another method of exterminating the Erie boatmen is to advance rates for the transportation of grain when the canal is closed and to reduce them far below the remunerative point when navigation opens in the spring, as corroborated by Superintendent Hannan in his official report. The effect is to divert a large proportion of the legitimate traffic of the canals. The future of the canals consequently excites deep solicitude on the part of all who are interested in their maintenance.

Commenting on the facts shown by the annual exhibit of the commerce of the canals, the Buffalo *Courier* says that, comparing 1892 with the average of the previous five seasons, the receipts of grain increased nearly 18,000,000 bushels, or 25.63 per cent., while rail shipments increased about 27,285,000 bushels, or 78.63 per cent.

It is therefore at a critical juncture in the history of the canals that Governor Flower comes forward with a suggestion that is warmly approved and seconded by ex-State Engineer Seymour, the New York Board of Trade and Transportation, and other authorities long identified with canal transportation. He proposes the use of electricity as a motive power for the promotion of rapid transit, and sustains his view with cogent arguments. The available water power required for the generation of electricity, he says, is ample. The State, furthermore, should own and control the plant, charging the boatmen sufficient to reimburse the cost, which would be much less than the cost of animal power. The Governor believes that inland waterways can be equipped with the single-trolley overhead system for $1,000,000. He says he has looked into the matter carefully, and that, together with his investigations and those of an experienced electrical engineer with whom he has talked, he is fully convinced of the practicability of the scheme. The State, he maintains, by this system could rush boats through from Buffalo to Albany at 60 cents a day each.

At a largely attended meeting held in this city a few days ago for discussing the preservation and improvement of the canal the Governor's suggestion was sustained with enthusiasm. The scheme was declared to be perfectly feasible; it would revolutionize the present system and put an end to dangerous competition; but the statement was made, further, that boats could not be driven with greater speed unless the canals are made wider and deeper. The proposition for a ship canal through the State of New York Engineer Seymour pronounces impracticable. "The solution of the transportation problem," he says, "is a 21-foot channel through the great lakes and a deeper and wider canal through the State of New York."

Now that the subject of canal building within the last few days has been prominently presented in a circular addressed to all the trade organizations in the country, and that the discussions before the Ship Canal Convention at Washington have done much to enlighten public sentiment, the time would seem fitting for a deliberate consideration of the necessity for speedy action in securing the construction of an adequate waterway between the great lakes and tidewater. There should be a thorough study of all improved means of propulsion.

An excellent illustration of the effect which the substitution of steel for iron is having in some industries is furnished by the experience of makers of car axles. These are now buying and working steel billets within ½ inch of the finished size,

so that little hammer work is required. Where iron called for four heats, which it was necessary to make very cautiously, steel axles are finished in two heats. The result naturally is that the quantity of work which can be turned out per annum is very greatly increased. Where 24 iron axles were the work of one shift, 36 steel axles are now produced. With cheap steel of excellent quality, axles which stand very much more severe tests are produced at a price nearly equal to that of the old iron axle. There is only one drawback, which railroad buying agents neglect only too frequently—that scrap steel has not the same value as the best No 1 selected wrought scrap, as which old iron axles would rate.

Large Steam Boilers.

In power boilers there just now seems to be a leaning not only to higher pressures—a tendency that has existed and exerted an increasing influence since the introduction of double, triple and quadruple expansion engines—but also toward the increase of horse-power capacity in a single boiler. It must be admitted that large boilers of any type usually generate steam more economically than small boilers of the same type. It was formerly believed that above a certain limit of capacity there was no sensible increase in economy of steam production corresponding to increase of boiler power, and it is doubtful still whether, with pressures still in vogue, after a capacity of from 60 to 100 horse-power has been reached, any notable difference would be observed between the amount of steam generated per pound of coal and the quantity made by a pound of the same fuel in a boiler of the same kind, having a capacity of say 150 horse-power. We should usually call a boiler of 10 horse-power small, and one of from 60 to 80 horse-power large. The difference of economy between the smaller and the larger of these boilers would generally be very sensible, and it is easy to account for it. While the outer shell, from which considerable heat escapes, even when protected by good insulation, increases directly as the diameter, the holding capacity increases as the cube of the diameter, provided all the dimensions are proportionally increased. The heating surface that can be placed within this outer shell, whether in the form of tubes or flues, does not increase as the cube of the diameter. Still it may be made very much larger in the aggregate, in proportion to the outer surface, than in a smaller boiler.

But this is not all. When the pressures carried were much lower than are demanded by modern steam engine practice the surface losses were much less than is now the case; so that differences in economy are now apparent that formerly would have been too small to be considered important. Thus we now hear of orders for single boilers of 500 horse-power capacity to be used for stationary engine purposes. Such a boiler would be as large in proportion to a 60 horse-power boiler as an 80 horse-power boiler is to a 10 horse-power. There should be therefore a very notable economy in the use of such larger boilers with the high pressures now used.

The danger of explosion and the enormous destruction that might result from the bursting of a boiler of the large capacity now coming into vogue is pushing the sectional water-tube and safety types of boilers rapidly to the front. Such boilers can be made to withstand enormous pressure without danger of blowing up, and they can have any desired capacity within reasonable limits. That their first cost is rather more than boilers of other types has retarded their introduction, but with the high surface temperatures of modern practice their merits have become more pronounced, and the question of first cost will no longer be so controlling as it has been in the past.

Warehousing Coal at Chicago.

At the present time there is being agitated a scheme for handling anthracite coal at Chicago on the warehouse principle. We are informed that the plans have been received favorably by some of the largest coal producers, by the railroad companies, and by the banks and largest dealers in Chicago.

The plan contemplates the placing at Chicago of an immense coal storage plant to receive coal at any time and in any amount from the mines, and to issue certificates for same against it.

Among the advantages claimed for this project is the possibility of delivering coal at any time most convenient for the producer, when he could obtain the best rates from the railroads. During a depressed market in other parts of the country the producer could ship to Chicago and store his coal until prices were more in his favor. In other words, his coal would not be forced on a glutted market. This, naturally, would tend to steady prices.

The certificates issued would be a guarantee of quality and quantity, and would obviate entirely the disastrous rebate system now in vogue. These certificates would be readily negotiable at the banks. We are informed that those Chicago banks which have been approached upon the subject have indorsed the plan, as it would enable them to lend money on undoubted security.

It is argued that the local dealer, who is now the most emphatic opponent of the plan, would be benefited, as it would bring his land, which in many cases is far too valuable to be used as a coal yard, into the market, and would do away with his heavy repair bills. He would be permitted to buy coal at the plant according to the demands of his trade, and, all things considered, would probably obtain it cheaper than he now does. There is said to be no intention of freezing out the small dealers, as all buyers of large and small quantities would be treated alike. But it is expected that the local dealer will find it to his advantage to do away with his yard and the necessary expenses of running it and look to the storage plant for his supply.

Last year Chicago used about 2,000,000 tons of anthracite coal, and a plant of this description in order to properly occupy the field should have a capacity to start with of at least 1,000,000 to 1,500,000 tons.

Coal storage plants have been found to work to advantage by railroads and large producers. A railroad having such a plant, or several of them, at various points along the line, finds that it can take advantage of the market and buy when prices are lowest. Of course, it loses the interest on the money thus locked up, but this loss is more than compensated for by the low price at which it bought the coal. The machinery for operating these plants has been perfected to such a degree that the cost of handling is of minor importance. The producer, or miner, derives a benefit from a storage plant, since it permits him to work his mines more uniformly and to thereby cheapen the cost of production. Having a large quantity of coal in sight, it can be thrown upon the market or kept out as may be most desirable, the result being steadier prices.

The Chicago scheme will be watched with interest, and especially its effect upon the local dealer and the small consumer. That it would be favorable to the producers, the railroads and the large handlers appears evident.

Our Northern Boundary.

The peculiar condition of Canada financially and commercially is becoming a general theme with newspaper correspondents. In the respects mentioned there is so much dissatisfaction that, if reports are entitled to credence, a very considerable proportion of the population—some say a majority—regard annexation to the United States as the only remedy. This feeling of discontent may be true of certain sections—the province of Quebec, for example, or localities adjacent to the boundary line, but the ordinary observer fails to discover indications of general dissatisfaction in the acute forms recognized as disloyalty or lack of attachment to the mother country, much less a positive alienation. A special dispatch to the Boston *Herald* from Quebec says:

> Your correspondent has found a sentiment absolutely unanimous that the prosperity of this dominion depends almost exclusively on its ability to obtain closer trade relations with the United States. How that trade or market may be reached is the all-important question of the hour. The prevalence of this sentiment in Quebec is of very great significance, for Quebec controls Canada. . . .
>
> There is a general consensus of opinion that the present condition of affairs cannot continue, that nature cannot be defied successfully either by a nation or an individual, and that Canada's present is very far from being a miniature of her future. There is a growing belief that Mr. Mercier will, should the commercial condition of Canada remain unchanged, lead a party which shall have for its goal either independence or annexation.

Quebec doubtless suffers from commercial isolation and looks longingly to the United States as a market for the products of its inhabitants. Profitless farms first caused an undue concentration of population in the principal cities and towns, and this

resort failing to give the desired relief, a migration is taking place toward the south which some writers describe as "alarming." The Government authorities seek an antidote by opening markets in the West Indies and South America, with indifferent results up to the present time, and the Imperial authorities manifest a maternal regard by practically guaranteeing Canada's financial stability. But despite all endeavors to the contrary, the drift of circumstances and sentiment is toward an obliteration of boundary lines between the Dominion and the Republic. Such an event, should it ever occur, must be preceded by a general upheaval of the existing order of things and a disruption of relations between Great Britain and her dependencies bearing some resemblance to the memorable events of 1776.

Keeping Shop Accounts.

When we see a machine embodying in its design and construction qualities of a decidedly superior character we expect shop methods of the same high degree of excellence. In this expectation we have never been disappointed. It seems to follow as a natural sequence. Some method of keeping track of the work passing through a shop, whether the shop be large or small, is recognized as being of the most vital importance. It is, in fact, the intimate union of the purely mechanical with the purely financial branches of the concern. It is conceded that without a careful attention to the latter there can be no success, even if the device should have great intrinsic merit.

Throughout the country the methods vary almost as widely as do the machines made. In small establishments we find that the proprietor and his foreman, if he has one, enter a private guessing match as to the price to be charged for certain work. From here on we find the method to be, as we may say, graduated, until we reach the plane where it is possible for the firm, with half an hour's notice, to give the actual value of the work expended upon any job going through the shop. There are several ways in vogue of doing this. The most usual is to designate each particular machine by a letter and the parts by numerals. These symbols start on their journey in the drafting room, where each drawing is properly marked, and then pass through the foundry, stock rooms and machine shops. The foreman of each department, when any part of this machine enters his domain, is provided with cards bearing the designating letters, and having the necessary blank spaces to show what may be done by him and his assistants. These spaces are filled in and sent to the office daily, and sometimes twice a day. In the counting room a sort of tabulation takes place. The many items relating to each machine are collected, and the ledger account of that machine made up and, if need be, balanced to date.

In general this method, modified perhaps, is the one in most common use. It takes into consideration the work performed by the man, but does not take into account the cost of the work done by the machine he is in charge of. In contradistinction to this we wish to consider the method that recognizes the machine but ignores the man. The fundamental principle of this scheme is found in the fact that a man is worth just so much per day, whether engaged in one part or another of the shops, while the work of the machines varies according to the value of the machines. In other words, under this system the work done by a machine costing $5000 is considered to be of more value than that done by a machine costing only $100, although the cost in labor to keep them both running may be the same. In carrying out this plan the machines are all numbered and the hours they work on any job are charged in the usual way; but the amount varies according to the cost of the machine performing the work. The work done by the men is taken as a fixed quantity—financially—and, therefore, need not be considered until the final summing up. By this method we find that ten hours' work on a $1000 machine costs much more than ten hours' work on a $100 machine, although the cost of labor, each machine requiring the undivided attention of one man, is the same.

This method is unqualifiedly correct in principle, but there are several drawbacks which have not yet been solved satisfactorily. We will suppose that there is a large machine costing $10,000. The nature of the work carried on in the shop will not permit of the continual use of this machine. On the average it is used only half the time. Then at what rate should the work of this machine be charged? If the value of the work done by it on each job is doubled then there is a charge for work never performed by it. It is argued that this course would be justifiable, because, if the machine were not there it would cost more by other methods or by sending the work to another shop having such a machine.

A case similar in principle, though reversed, comes up when several machines are tended by one man. If these machines are taken collectively and considered as one, then we have the case of the $10,000 machine—they may not be kept running constantly. If we consider them separately, then one man's work is too widely distributed, and we do not get the value of the manual labor performed.

There is one essential and governing feature in all the methods of keeping shop accounts—they must not be too cumbersome. An unlimited clerical force cannot be maintained, neither is it possible, on account of the cost, to carefully keep track of the work of both men and machines. It is necessary to enter into some sort of a compromise; and we find that superintendents cling to the men and discard the machine, or *vice versa*.

The valuation of the Hawaiian Kingdom is reported to be $36,500,000, of which only 5 per cent. is owned by natives. The American ownership is equivalent to a heavy mortgage.

CORRESPONDENCE.

The Explosion of Silvanus.

To the Editor: For the benefit of the readers of *The Iron Age* who may have not fully appreciated the phenomenal nature of the controversy to which reference has recently been made, the following brief commentary thereon may be useful:

The Gilbert Club is a British society organized several years ago, for the ostensible purpose of perpetuating the fame of Dr. William Gilbert (the first electrial discover) and of publishing a translation of his famous treatise, "De Magnete," which appeared in Latin in 1600. Silvanus P. Thompson is a professor of physics of superior attainments and comely presence, though, perhaps, just a trifle lacking in those manly proportions which would render him a suitable companion piece to the forthcoming silver statue of Miss Ada Rehan.

In the course of progressive evolution, the Gilbert Club has become reduced to Silvanus and some names. The names are the property of several eminent Britons, including some lords, but their precise function in the enterprise is merely as names, serving, in fact, to produce that same comforting glow of satisfaction in the British public which the pious old lady of the story always felt on perusing the word "Mesopotamia." Doubtless realizing this state of affairs, Silvanus, for some time past, has considered himself to be the Gilbert Club and acted accordingly, and as Silvanus is apt to be cantankerous when opposed, and at such times is terrible, people have thought best to humor him in the notion.

Meanwhile the promised translation of Gilbert's work has not appeared; and as popular interest in that philosopher has steadily increased, it came about that two independent translations of the treatise were started—one by P. F. Mottelay, the other by the writer. The latter, however, on learning of Mr. Mottelay's work and realizing not merely the superior facilities but the superior fitness which that gentleman had for doing it, at once withdrew in his favor and commended his undertaking to John Wiley & Sons, the publishers. As a result of that transaction, Mr. Mottelay's excellent book is now practically ready.

It seems, however, that during all this period Silvanus was also busy upon a translation—at least in the time that he was not getting people to subscribe for it; consequently when, in utter disregard of the rights which Silvanus felt assured that he had in a book published 300 years ago, the reckless Mottelay and the vicious Wileys proceeded to trample thereon through the innocent announcement of their own work, Silvanus passed from his normal condition, which may justly be described as one of fizzle, to the state of violent detonation already exhibited in these columns.

Now, while in chemical operations explosions are not uncommon, and we might even imagine that through a careless inhalation, say of combined air and hydrogen, the gaseous character of a professor of chemistry might become so modified as to cause him, on accidentally lighting himself, to blow up, still physical apparatus has never been charged with such a failing, and still less have professors of physics. The most carefully compiled statistics concerning Professor Brackett, or Professor Mayer, or Professor Nichols, or Professor Rood, do not indicate the slightest detonative tendency on the part of these gentlemen. So that the phenomenon we have to deal with is abnormal, and any reasons which may account for it are of extreme scientific interest. Either professors of physics are a source of grave public danger, or this particular professor must be regarded as a new

kind of British freak, for whom, if imported, we have even more dollars waiting than those which we have lavished upon the similarly explosive warbler of "Ta-ra-ra-boom de-ay."

But let us calmly ratiocinate—premising that Silvanus has never seen Mr. Mottelay's work, nor Mr. Mottelay that of Silvanus.

1. May be Silvanus has caught the prevailing Buddhist craze and has discovered that William Gilbert has become reincarnated in the secretary of the Gilbert Club. So that what we have now to deal with is merely the beginning of an agitation in favor of inter vital copyright. This is perhaps too theosophical for a professor of **physics.**

2. May be Silvanus is simply trying to advertise his own alleged translation. But thot is too business-like to be characteristic.

3. May be, in view of Silvanus' unfortunate gyrations some time ago, anent the memory of Philip Reis and his telephone, people have stupidly regarded the Gilbert Club in the light of a bludgeon, to be similarly used on the memory of Gilbert. And herein is room for thought.

4. May be Sylvanus is merely talking through his hat. But this begs the question, and, besides, the proceeding is not normal, but *ab*normal.

5. May be people think that the Gilbert that Silvanus thinks he is is not that Gilbert, but the other Gilbert, and that "De Magnete" is a comic opera of "the flowers that bloom in the spring, tra la" type. This would be dreadfully annoying to a serious scientific person, even of no eruptive tendency, especially if a further confusion of ideas should attribute the accompanying melodies to that Sullivan whose initials are John L.

On the whole, this last hypothesis seems the most reasonable, and if it should further turn out that Silvanus has received a communication, say from Antonio Pastor, offering dates and royalties for the production of "D. McGinty," who could blame Silvanus for calling hard names—even at the safe distance of 3000 miles?

PARK BENJAMIN.

NEW YORK, January 12, 1893.

OBITUARY.

JOHN R. LINEN.

John R. Linen, a well known business man, died at his home in Buffalo, N. Y., January 10. For many years he was president of the Buffalo Scale Company.

GEORGE W. PERCY.

George W. Percy, one of Troy's (N. Y.) oldest residents, died January 11 from a cold which superinduced pneumonia. He was born in Hoosick, N. Y., November 27, 1820. He went to Troy when a young man and engaged in various lines of business. After a few years he formed a copartnership with John E. Gaitley in the nickel-plating business. For many years he served Taylor & Ackley, hardware dealers, faithfully. He retired from business about a year ago on account of failing health.

RICHARD T. BUCK.

Richard T. Buck, proprietor of the Buck Brothers Riverlin Chisel Works, died Thursday, January 12, at his home in Millbury, Mass., in the 61st year of his age. A more extended reference to the life of this well-known and successful manufacturer and estimable citizen is deferred until our next issue.

H. O. BONNELL.

Henry O. Bonnell, a veteran iron manufacturer of the Mahoning Valley, and who has been engaged in the iron business in Youngstown, Ohio, since 1855, died Monday night, January 16. He had been ill bout two weeks, and his death is said to have been the result of an affection of the heart. The deceased was with the well-known iron firm of Brown, Bonnell & Co. until 1878, when he with others organized the Mahoning Valley Iron Company. His death is a severe loss to the large business interests of the Mahoning Valley, particularly in the line of business with which he was so long and honorably identified.

PERSONAL.

H. M. Hanna of Cleveland has gone to Cuba in his yacht, the party including E. C. Pechin, John F. Pankhurst and Charles Chapin.

J. B. Knight, editor of the Norway *Current*, has been appointed Commissioner of Mineral Statistics for the State of Michigan.

N. Roberts has resigned his post as chief engineer of the Wallis Iron Works, Jersey City, N. J.

C. R. Ellicott of Catoctin, Md., has accepted the position of manager of the Copake charcoal furnace, at Copake, N. Y.

Chief Engineer Nathan P. Towne, for the past four years principal assistant to Commodore Melville, in charge of the drawing room of the Bureau of Steam Engineering in the Navy Department at Washington, will for the next two years occupy a similar position with William Cramp & Sons, the shipbuilders.

W. H. Blauvelt, who has been giving attention to the Taylor gas producer, manufactured by R. D. Wood & Co. of Philadelphia, has accepted a position with the Anaconda Mining Company, at Anaconda, Mont.

Gustave Miller, chief night chemist of the Edgar Thomson Steel Works, at Bessemer, Pa., has resigned his position and connected himself with the Heinz Pickling & Preserving Company of Pittsburgh.

Jos. Miller, for some years assistant superintendent of the Carrie Blast Furnace plant of the Carrie Furnace Company, at Rankin, Pa., has resigned his position and will take charge of Rebecca Furnace of the Kittanning Iron Company, Limited, at Kittanning, Pa., on February 1.

F. G. Tallman, mechanical engineer of Pittsburgh, has been appointed Pittsburgh representative of the hoist and crane departments of the Yale & Towne Mfg. Company of Stamford, Conn. Mr. Tallman's headquarters are in the *Times* Building, Pittsburgh, Pa. E. H. Keating, who has heretofore represented the above firm in Pittsburgh in the lock and hardware departments, will continue in that capacity.

On Tuesday Captain A. E. Hunt of Pittsburgh delivered an interesting address as president of the Engineers' Society of Western Pennsylvania.

G. S. Merwin of Rogers, Brown & Merwin, pig iron merchants, who was recently seriously injured by being thrown from a horse while traveling through the South, is now lying at his home in Chicago in a very critical condition, with grave fears of a fatal termination.

Thomas McDonald, at present foreman of the converting department of the Duquesne Steel Works of the Carnegie Steel Company, Limited, at Duquesne, Pa., has tendered his resignation and on February 1 will connect himself with the Ohio Iron Company, now building a Bessemer plant at Youngstown, Ohio.

A full set of axles and wheels for a 60,000 pound freight car is now being sold, delivered at Eastern car manufacturers' works, for $100.

Montgomery furnace, at Port Kennedy, Pa., has just gone out of blast.

Washington News.

(*From Our Regular Correspondent.*)

WASHINGTON, D. C., January 17, 1893.

A committee of gentlemen consisting of Col. Geo. Griscom, President Moorhead, McLean & Co.; W. C. Cronemeyer, Wm. Weihe, John Jarrett of the Amalgamated Iron and Steel Association of Pittsburgh; Mr. Davis of the Apollo Works, and also gentlemen representing the iron roofers and steel plate manufacturers have been here in conference with Representative Chas. W. Stone of Pennsylvania, a member of the Committee on Coinage, Weights and Measures, in reference to the bill providing for establishing a standard sheet and plate gauge. Mr. Stone introduced this bill on April 12, 1892, and has been giving it close attention ever since. He is in hopes of having the committee ask for a day when the bill can be taken up and passed.

The object of the measure is to secure conformity through national legislation and to require that no other standard gauge shall be used in determining weights and measures or in determining duties and taxes levied by the United States on all articles under the said schedule.

After a protracted hearing and investigation of the recent contracts for the armored cruiser "Brooklyn" and sea-going battleship "Iowa," for one of which the Union Iron Works of San Francisco were competitors, notwithstanding the fact that their bid was not the lowest, the Secretary of the Navy awarded both to the Cramps of Philadelphia, for reasons stated in the following important official communication, which, in addition to the general information which it contains on the subject, will establish a precedent for the government of the action of the Secretary in similar cases in the future:

Under the department's advertisement of September 28, 1892, inviting proposals for the construction of one armored cruiser (armored cruiser No. 3, the "Brooklyn," of 9186 tons displacement) and one sea-going battle-ship (sea-going battle-ship No. 1, the "Iowa," of 11,285 tons displacement), the following bids were received, viz.:

For the "Brooklyn," class 1. Hull and machinery, complete in all respects, in accordance with the plans and specifications provided by the Secretary of the Navy. Newport News Shipbuilding & Dry Dock Company, Newport News, Va., $3,147,000; Union Iron Works, San Francisco, Cal., $3,050,000, and the William Cramp & Sons Ship and Engine Company, Philadelphia, Pa., $3,986,000.

Class 2. Hull and machinery, complete in all respects, in accordance with the plans and specifications provided by the bidder. Bath Iron Works, Bath, Maine, $3,105,000; the William Cramp & Sons Ship and Engine Building Company, Philadelphia, Pa., *a*, $3,086,000; *b*, $2,880,000.

For the "Iowa"—Class 1. Hull and machinery, complete in all respects, in accordance with the plans and specifications provided by the Secretary of the Navy. Newport News Shipbuilding and Dry Dock Company, Newport News, Va., $3,238,000; Union Iron Works, San Francisco, Cal., $3,150,000; Bath Iron Works, Bath, Me., $3,185,000; the William Cramp & Sons Ship and Engine Building Company, Philadelphia, Pa., $3,010,000.

Class 2. Hull and machinery, complete in all respects, in accordance with the plans and specifications provided by the bidder. The William Cramp & Sons Ship and Engine Building Company, Philadelphia, Pa., *a*, $3,110,000; *b*, $2,870,000. I have had under consideration the bids, class 2, *a* and *b*, of the William Cramp & Sons Ship and Engine Building Company, wherein that company proposes to con-

struct these vessels with quadruple expansion engines, and after mature deliberation have concluded to reject these bids for the reasons stated by the engineer-in-chief.

The vessels will, therefore, in accordance with the recommendation of the Bureaus of Construction and Repair and Steam Engineering, be built in accordance with the plans and specifications provided by the department.

Had I the power to award the contracts for the construction of these ships in my discretion I should distribute them to two firms, but I have no such power. I am required by the statute to award the contracts to the lowest and most responsible bidder, and there is no doubt that Messrs. Cramp & Sons are the lowest bidders, and I cannot say that the Union Iron Works are better builders than the Messrs. Cramp & Sons any more than I can say that the Messrs. Cramp & Sons are better builders than the Union Iron Works. I regard them both as excellent builders and equally good. Under such circumstances it is plainly my duty under the law to award the contracts for both of said vessels to the Messrs. Cramp & Sons, and the contracts therefore are accordingly hereby awarded to them at the price for each respectively stated in their proposals under class 1.

Under the competition which the construction of the navy has stimulated among our manufacturers of shipbuilding material, there has been a reduction in the price of such material, which, in view of the superior quality required, is quite remarkable, and it is a source of great gratification that this large reduction in the cost of the ships is effected without a reduction in the wages of the laborers and mechanics employed in their construction.

B. F. TRACY,
Secretary of the Navy.

Another lodge of the National Association of Iron and Steel Finishers was formed in Pittsburgh on Saturday evening, the 14th inst., and arrangements were made to establish lodges in several other Western cities. This new union now claims to have over 800 members, and this number is being rapidly increased. It is said that the next convention of the Amalgamated Association of Iron and Steel Workers, to be held in Pittsburgh in June next, will be an extremely important one, and several radical changes will be made then. One of the proposed changes to be made is in the constitution, which will be altered so that this organization will be better enabled to take action on several matters that will need heroic measures.

A crane recently shipped by the Morgan Engineering Company of Alliance to the World's Fair at Chicago is operated by electric motors of the Thomson-Houston make. The crane was designed by W. H. Morgan, son of T. R. Morgan, Sr. The crane will lift 30 tons with ease, and will travel the entire length of Machinery Hall, a distance of 1300 feet. On top of the girders is a platform for passengers to ride from one end of the building to the other and view the machinery beneath them. To reach the platform there will be an elevator at each end of the building.

The Schreiber, Conchar & Westphal Co., hardware manufacturers, of Dubuque, Iowa, are now equipped to do electroplating on an extensive scale, having recently installed a large plating plant furnished by the Zucker & Levett Chemical Company of New York.

An accident has happened to the 7-inch bar mill of the Alan Wood Company, at Conshohocken, Pa.

MANUFACTURING.

Iron and Steel.

It is reported that a number of Pittsburgh capitalists have decided to erect a plant at Blairsville, Pa., for the manufacture of structural material for bridge work. It is claimed that sufficient capital has been raised to insure commencement of operations just as soon as weather permits.

On Friday, the 13th inst., the Oliver Iron & Steel Company of Pittsburgh turned out in their Lower Mills in Allegheny, Pa., a shaft which measures 39 feet 2 inches in length. This is said to be the longest shaft ever rolled by any concern in Pittsburgh, although thicker and heavier shafts have been turned out frequently.

The annual election of officers of the Andrews & Hitchcock Iron Company, Incorporated, of Youngstown, Ohio, operating the Hubbard Furnaces at Hubbard, Ohio, was held last week. The old board of directors, consisting of C. H. Andrews, William J. Hitchcock, U. A. Andrews, Frank Hitchcock, J. A. Logan and William J. Hitchcock, Jr., were re-elected. The directors organized by re-electing the old officers, who were: William J. Hitchcock, president; J. A. Logan, vice-president; Frank Hitchcock, secretary and treasurer.

At Pittsburgh last week a bill in equity was filed by Samuel Lewis, receiver of the Dexter Spring Company of Hulton, Pa., against Wm. Grier. The case is brought to restrain Grier from collecting royalties under patents on fifth wheels and body braces formerly owned by him, but sold to the Dexter Spring Company. Under an agreement he was to prevent any infringement, bring suits if necessary, and was to receive a royalty of 50 cents for each article manufactured. It is charged, however, that a number of firms have infringed the patents and are manufacturing the articles in question, thus injuring the plaintiff's business. Grier was notified, but neglected to sue the infringers. It would be impossible, it is claimed, to recover damages from Grier, and in lieu thereof the court is asked to restrain him from collecting royalties from the plaintiff.

Furnace F of the Carnegie Steel Company, Limited, at Braddock, Pa., which is undergoing repairs, will probably go in blast during this month. Furnace B now running on spiegel will be blown out in a short time for relining and repairs.

W. W. Allis, Charles Allis and W. H. Cottrell of Milwaukee are interested in the project of building a blast furnace at Ironwood, Mich.

A press dispatch from Cambridge, Ohio, under recent date reads as follows: A. Brown of the Cambridge Iron & Steel Company and A. W. Nicholson of the Cambridge Roofing Company, with Congressman J. D. Taylor as bondsman for $1000, filed a petition in the county court here to-day for an injunction restraining the borough council from issuing bonds and paying the $20,000 bonus to the Pittsburgh and Zanesville parties with whom an agreement had been made for Cambridge to give these considerations for the establishment here of a sheet rolling mill. The deal was made on the old plan of encouraging the location here of new manufacturing industries, and there is a division of popular opinion as to the legality and advisability of the arrangement. Judge Chambers promptly granted a temporary injunction as prayed for.

Last week a charter was granted to the Jno. Dunlay Company of Pittsburgh, with a capital stock of $200,000, for the manufacture of tinware, stamped and japanned tinware, tinners' supplies and sheet metal goods. The directors are Mary J. Dunlay, Thomas G. McClure, James Boyd and William T. Dunlay of Pittsburgh. This new concern will succeed to the business and interests of the old-established firm of John Dunlay & Co., which have carried on the above business at 28 and 30 Market street, Pittsburgh, for more than 50 years.

The Hudson Iron Company of Hudson, N. Y., expect soon to dismantel its two anthracite furnaces and to erect a new stack in their place.

The Poughkeepsie Iron Company of Poughkeepsie, N. Y., do not expect to make iron again in their No. 2 stack. The old stack will probably be replaced with a new one.

The Braddock Wire Works, Braddock, Pa., have resumed operations after a shut down of five weeks for annual repairs.

The East New York Iron Company of Ishpeming, Mich., have assigned to R. Ely, who will wind up the affairs of the company.

The corner stone of the Denver Steel Rolling Mills has been laid at Sheffield, Col.

The plant of the Youngstown Steel Company, at Youngstown, Ohio, is closed down at present while the usual annual repairs are being made.

The Lookout Iron Company, Harriman, Tenn., recently made on an 18-inch mill with 14 heats 74,041 pounds of ¾-inch round iron in nine hours and a half.

A. Blumer of Moss Point will erect a machine shop at Scranton, Miss.

The large Philadelphia Furnace at Florence, Ala., is running to full capacity, and the North Alabama Furnace is being repaired and will soon be in blast.

It is stated that the Appalachian Steel & Iron Company, at Big Stone Gap, Va., have received large orders for iron and will start up their furnace at an early day.

The Citico Furnace, at Chattanooga, Tenn., has blown out for relining.

It is reported that the stockholders of the Roane Iron Company have taken the $300,000 bonds issued to erect a furnace at Rockwood, Tenn., and that work will be commenced at once. The new furnace will be 75 feet high with a 17-foot bosh and 9-foot hearth.

The Dilley Foundry Company have been incorporated with $75,000 capital, and will erect a foundry and machine shop at Pine Bluff, Ark.

The Tynan Machine and Foundry Works, with a capital of $50,000, have been incorporated at Savannah, Ga., to erect a foundry and machine shop. D. G. Purse, Emile Newman and others are interested.

Machinery.

The R. A. Crawford Mfg. Company of Pittsburgh, Pa., have been incorporated with a capital stock of $18,000 to manufacture and sell Crawford's patent automatic wheel and pick-up guards for cars. R. A. Crawford, S. D. Warmcastle and Jno. H. Newell are the incorporators.

The Pittsburgh Gas & Electric Fixture Mfg. Company of Pittsburgh were granted a charter last week, with a capital stock of $10,000. Jno. M. Thompson, E. W. Mudge, David T. McKee and Robert B. Ivory are the directors.

The Triple Wire Nail Machine Company, formerly located at Parkersburg, W. Va., have removed their machinery to Bridgeport, Ala., where they are now operating a large plant for the manufacture of wire nail machines. Considerable of their machinery was left at Bridgeport, and this has been sold to C. M. Robinson of Baltimore, who is now engaged in enlarging and improving the plant and will operate it as a machine shop.

The Troy, N. Y., Valve Company have been incorporated. They will manufacture and sell valves, hydrants and other articles pertaining to them. The capital stock is $30,000. The following are directors: Esek Bussey, 60 shares; Chas. A. McLeod, 60 shares; William Ross, 75 shares; Adam Ross, 2d, Robert Ross, J. C. Ross, each 25 shares; Esek Bussey, Jr., Sayre McLeod, each 15 shares. The concern is incorporated for 50 years, and the principal office will be at Troy. The trustees are: Esek Bussey, Charles A. McLeod, William Ross, Adam Ross and Esek Bussey, Jr.

The real and personal property, at South Chicago, of the Porter Boiler Mfg. Company, who recently failed, has been sold to John Mohr & Son of Chicago. Albert Mohr will be in charge of the new purchase, conducting it as a part of the Chicago business. The Porter boiler plant will be remodeled and new machinery added where it is needed. Being on the Calumet River and having direct railroad connections, it is anticipated that this addition will make John Mohr & Son more prominent than ever in the Western boiler trade.

The extent of the business of the E. P. Allis Company of Milwaukee, Wis., can be inferred from the statement that in 1892 they shipped a daily average of 350 horse-power in engines. This, of course, included all sorts of engines, from those of 2000 horse-power down. In addition to engines, the company manufactured an increased quantity of machinery of various kinds as compared with previous years.

Haight & Clark, iron founders of Albany, N. Y., issue a circular calling attention to their facilities for making all kinds of iron castings, as well as brass, bronze and aluminum bronze castings from patterns furnished them or from patterns made by them, if desired. They also do drilling, lathe work and finishing, and nickel, brass and bronze plating and japanning.

A large foundry and machine shop will be erected at Belton, Texas, by David Wood and others.

The Holly Mfg. Company of Lockport, N. Y., have elected W. H. Wells of Chicago vice-president. The company are planning for improvements in the spring. Superintendent

Frank Holly denies that there is any truth in the rumor that the department for the manufacture of hydrants is to be removed to Chicago. A 6,000,000-gallon pumping engine is being shipped to Jamestown, N. Y.

The Lodge & Shipley Machine Tool Company of Cincinnati, Ohio, have recently purchased the drawings, patterns, patents, goodwill, &c., to the gear-cutting engine and automatic gear-cutting machines of C. C. Newton.

The Eddy Valve Company of Waterford, N. Y., have secured the contract for furnishing the hydrants needed to extend the Water system of Syracuse, N. Y. Their bid was: Valves, $21,185; hydrants, $21,000; extras, $1,450.

The net earnings of the Union Switch & Signal Company of Pittsburgh, Pa., for the year ending December 31, are reported to be $100,000. It is said it requires but $18,000 to meet the fixed charges of the company.

At Marion, Ohio, $40,000 has been subscribed to the capital stock of a company shortly to be organized for the purpose of manufacturing the Austin automatic boiler feeder.

The West Coast Iron Works Company of Ballard, Wash., have completed the construction of a new foundry 150 x 100 feet in size.

The Troy Valve Company, capitalized at $30,000, have been incorporated at Albany, N. Y. The company will manufacture valves and hydrants and articles pertaining to them. The principal office will be located at Troy.

Miscellaneous.

It is given out in Pittsburgh that the Philadelphia Natural Gas Company paid for the plant and franchise of the Duquesne Natural Gas Company between $120,000 and $125,000.

The Frictionless Metal Company, manufacturers of journal-bearing metal, Chattanooga, Tenn., are preparing to remove their plant to Richmond, Va., where they will increase their capacity.

The Jones Car Works, at Rotterdam, N. Y., have been sold to E. C. White & Co. of New York for $65,000. The purchasers are manufacturers of car wheels, car trucks, &c. It is not stated what disposition will be made of the works.

The Southern Steel & Aluminum Alloy Company are preparing to manufacture metal aluminum and alloys, commercially, on a large scale at Rome, Ga.

The Day Metal Company, St. Louis, Mo., are sending to the trade a circular setting forth the merits of the metal made by them, known as Day's gold leaf metal, which is especially adapted for use with high speed and heavy machinery and shafting. A portion of the circular contains testimonial letters from those who have used the metal, and they one and all speak in high praise of it. This metal is put up in boxes of 50 or 100 pounds.

The directors of the Manufacturers' Natural Gas Company of Pittsburgh have declared a regular monthly dividend of ½ of 1 per cent., payable on and after the 20th inst.

The Clifton Springs, N. Y., Mfg. Company have elected: Directors, J. E. A. Brooks, Herbert C. Evered, Rush Spalsbury; president, Rush Spalsbury; secretary and treasurer, H. C. Evered. Mr. Brooks will continue as superintendent, and the works will soon be in operation.

H. A. Frances & Co., Niagara Falls, N. Y., are fitting up a factory in the Cliff paper mill, and will employ 25 men in the manufacture of patented hooks and eyes.

The Munnsville Plow Company of Munnsville, Madison County, N. Y., have been incorporated at Albany to manufacture and sell plows and other agricultural tools and implements. The capital stock is $50,000; 500 shares at $100 each. The board of directors are: Clarence W. Dexter, 167 shares, and William R. Paul, 167 shares, of Munnsville; John E. Sperry, Elbridge.

The buildings of the National Car Wheel Company, at Lancaster, N. Y., have been completed, and mechanics are busy putting machinery in place. The establishment will probably not be run at its full capacity until spring.

The Jones Car Works, at Schenectady, N. Y., have been sold to E. C. White & Co. of New York, manufacturers of car wheels and trucks, for $65,000. The new proprietors have purchased all claims against the plant, and it is expected that operations will be resumed in the spring.

It is reported that negotiations are pending between Niagara Falls, N. Y., parties and representatives of the Edison General Electric Company of Schenectady, N. Y., for a site at the former city, where an enormous factory for the manufacture of electrical machinery and supplies, including dynamos and various electrical apparatus will be erected. The Edison General Electric Company is one of the largest manufacturing concerns in the United States. The present plant at Schenectady is an enormous one, and is running at its fullest capacity. It is said that the prospect of cheap power and fine shipping facilities have drawn the attention of the company to Niagara Falls. According to a report, a farm of 160 acres, which adjoins the city line on the east, is the site which seems to have met with favor. It is said that stone and brick buildings covering 25 acres of ground will be erected. Stone can be quarried on the property, which is also near the Niagara Junction Railroad. Those competent to give an opinion say that there are grounds for the rumor.

It is stated that the Standard Scale Works, at Rome, Ga., will commence operations the latter part of January and they have orders for 1500 pairs of trucks from the West, also an order for railroad track scales.

The German Iron Trade.

(One mark per metric ton is equivalent to 24.8 cents per gross ton.)

DUESSELDORF, December 29, 1892.

The greatest surprise has been created in this district by the news of the strike in the Saar Coal district where, out of the whole body of miners of 28,200 men, over 11,000 suddenly stopped work without any previous warning. The reason for the strike is claimed to be that henceforth the tools are to be furnished by the mine owners instead of by the men, and that younger miners are to serve at times as trammers. It is stated that there is little hope for a successful issue of the strike because the men have no funds and cannot expect any help from other quarters. They are among the best paid miners of Germany, making from 4.20 to 4.55 marks per 8-hour shift.

The Coal shipments of the Ruhr District have increased so rapidly that on Friday, December 23, the greatest shipments ever made were sent out, the quantity being 12,030 cars of ten tons.

The increase in the number of Coke ovens and sharp competition in the marketing of the product, and the fact that nearly all the blast furnace plants of the Coal region have their own coking works has lead the Westphalian Coke Syndicate to announce a restriction of output of 29 per cent. as against 20 per cent. to date. For the first quarter of 1893 the price is 11 marks for this District, while it is 9 marks for the Luxemburg-Lorraine region, and a shade under 6 marks for export.

In the Iron and Steel markets a further decline has taken place. Yesterday the railroad department at Berlin closed an order for 1140 tons of Basic Steel Bars at 106.95 marks per metric ton.

Pig Iron continues to decline and Siegen high-grade forge Iron has been sold below 43 marks per ton, while 10% Spiegeleisen has brought about 47.50 marks. The State Railroad Department is taking seriously into consideration the substitution of imported Wooden Ties by domestic Steel Sleepers. Contracts for Wooden Ties have been withdrawn, and at several places bids are being asked for Steel.

Consolidation seems bound to become the watchword in many departments of industry. Sessions have been held in Chicago by the Wire Rod and Wire manufacturers, at which a representative of the largest Wire plant presided, and a St. Louis producer acted as secretary. The meetings are over and further negotiations will be carried on by correspondence. Some of the Cut Nail manufacturers East of the Allegheny Mountains are also talking of closer relations. The Brass and Copper makers are said to be near the successful issue of their negotiations, and a Copper Wire consolidation is well advanced toward its consummation. The Western Cast-Iron Pipe foundries are to meet to day.

The Engineers' Club.—The annual meeting of the Engineers' Club was held at the club house, 10 West Twenty ninth street, New York, on December 17. The report of the Board of Management showed that the membership on December 31 had reached a total of 601. The club is financially in a prosperous condition, having increased its cash balance during the last fiscal year by $3233.37, or nearly the whole amount of the initiation fees received. The following were elected members of the Board of Management to fill vacancies and expired terms: J. F. Holloway, John Stanton, John Thomson, James E. Denton, Wm. H. Wiley, Foster Crowell and Chas. M. Wales. At a subsequent meeting of the Board of Management the following were elected officers of the club and members of the different committees: President, J. F. Holloway; vice-presidents, John Stanton and John Fritz; treasurer, A. C. Rand, and secretary, David Williams. House Committee: G. W. McNulty, chairman; C. M. Wales, W. H. Fletcher, H. deB. Parsons, E. H. Wells. Committee on Admissions: Stephen W. Baldwin, chairman; G. W. Bramwell, C. Kirchhoff, John H. Church, E. V. Clemens, Foster Crowell, J. F. Lewis, H. W. Wales and John Thomson. Library Committee: G. W. Bramwell, chairman; J E. Denton and C. Kirchhoff. Auditing Committee: J. C. Kafer, chairman; Clark Fisher and H. G. Prout. Committee on Entertainments: Geo. W. Bramwell, chairman; G. W. McNulty. The following were elected members: Albert A. Wigand, New York. Augustus Mordecai, New York. Charles L. Rowland of the Continental Iron Works, Brooklyn, N. Y. Wm. L. Lyall, New York. H. C. Frick of the Carnegie Steel Company, Pittsburgh, Pa. S. L. Schoonmaker, of the Carnegie Associations, New York. W. C. Temple, Pittsburgh, Pa. F. J. Falding, Cleveland, Ohio. George F. Meyer of the De La Vergne Company, New York. Charles I. Earll, New York. Chas. H. Odell, Edgar Thomson Steel Works, Yonkers, New York. A. L. Griffin, Keystone Bridge Company, Pittsburgh, Pa., and H. R. Marsden, New York.

A Suit on Beams.—Louis Hernshein, dealer in iron and steel, of 29 Broadway, recovered judgment on Tuesday, the 17th inst., in the United States Circuit Court for the Southern District of New York, against the Wallis Iron Works of Jersey City, for $4048.57 damages for breach of a contract for the purchase of steel beams. The contract was made on December 31, 1891, and provided that the beams were to be sawed according to specifications to be furnished prior to July 1, 1892, the beams to be delivered within 30 days after the receipt of specifications. It will be remembered that the price of beams in this market on December 31, 1891, the date of the contract, was about $3.10 per 100 pounds. The contract price was $2.45 per 100 pounds. The Wallis Iron Works omitted to furnish any specifications or to give any order for shipment, as required by its contract, and in the meantime the price of beams had fallen on July 1, 1892, to about $2.10 per 100 pounds. The jury, under the instructions of Judge Wheeler, adopted $2.10 as the market price on July 1, 1892, and gave judgment accordingly. The principal defense was that the contract, which was in the usual form of bought and sold note, was merely an option, to be exercised by the buyer or not as it pleased. Judge Wheeler disposed of that defense in the plaintiff's favor, so that the jury had only to compute the amount of damages. Treadwell Cleveland and Henry W. Hardon tried the case for the plaintiff, and Hamilton Wallis for the defendant.

TRADE REPORT.

From some of the Western Pig Iron markets come reports which indicate growing activity, accompanied, however, by intimations that it has been secured through concessions to buyers. The local Chicago furnaces have made the pace in that market, and have placed very considerable quantities of Iron, the concessions, however, being in relatively small amounts. The Southern furnaces are reluctantly meeting the competition, but are not notably lowering prices where their influence is dominant. There has been a more active trade in Cincinnati, and Detroit, too, notes a livelier movement.

In Eastern markets sellers are more stubborn, and Philadelphia, notably, records a firmer feeling.

The Pittsburgh and its allied districts have apparently settled down to $13.50 for Bessemer Pig, and $12 25 for Gray Forge, with relatively little new business closed.

Steel Billets are dull in both Eastern and Western Pennsylvania. In the former buyers are holding off in the expectation of doing better. In Pittsburgh $21.50 remains the open quotation, with sellers declining buyers' overtures at $21.25.

The makers of Soft Steel outside of the Rail plants regard the continued existence of the Rail Association as one of the principal causes of the depressed condition of Billets. They argue that Rail makers can afford to go down to cost, or cut under it to keep busy, particularly since they draw tonnage rates during periods of idleness in Rails. It may be stated in this connection that there has been some uneasiness in Rail circles for some time past, and that the recent decline is not regarded by some in trade as a matter which has aided the business. It has not encouraged buying, and has thus failed to procure winter work for the mills, which the majority of them must need.

There are reports, as yet not fully confirmed, that Eastern mills have taken orders for New England roads aggregating about 35,000 tons. Contracts are pending for a like quantity with several roads running into New York.

In Finished Iron and Steel, in all departments and in nearly all markets, the situation is characterized by unexampled competition and by prices which have descended to an unheard-of level. While it is unquestionably true that a very large amount of business is coming up, the fact remains that there is very little being given out now. Since the mills want immediate work, the struggle for it is exceptionally severe. It must be kept in mind, however, that the markets under such conditions are in a position where very quick recovery is possible. The question which troubles the trade is, how much it takes to fill the insatiable maws of the mills. During the past six months those who had retired with order books well filled have usually been ready for more before those at the end of the line had been reached.

The Metal markets show little of interest. Copper is dull, and somewhat disappointing official statistics have been given out. The Tin speculators have indulged in some unusually lively antics. Lead and Spelter are dull, and Tin Plates are featureless.

Chicago.

(By Telegraph.)

Office of *The Iron Age*, 59 Dearborn street, CHICAGO, January 18, 1893.

The market is in a more active condition so far as Pig Iron is concerned, but remains rather quiet in finished products. Values have receded to some extent and the general tone is decidedly bearish.

Pig Iron.—The past week witnessed the closing of quite a number of good-sized contracts for Local Coke Iron, for delivery during the first half of the year. Competition among sellers was so keen that prices were reduced to a lower level than had been touched during the previous three months. The peculiarity of the present condition of affairs is that cuts now made are only of 10¢ @ 15¢ ℔ ton, instead of 50¢ @ $1, as was formerly the case in times of depression such as this. If all the transactions were known it is believed that the aggregate would show a very heavy volume of business for the week. The activity anticipated for January has thus materialized, but by no means in a shape satisfactory to furnace companies. Our quotations are revised to meet the changed condition of the market. Low as prices now are, there are still some large buyers who look for a lower range and are withholding contracts until sellers come closer to their views. The heavy consumption of Iron is indicated by the excellent demand for small lots for quick delivery. Sellers state that frequently they receive a second order before they have been able to make shipments on the first. This is particularly the case with Southern Coke Iron, on which prices have not been reduced to correspond with Northern Irons. The Southern companies appear to be rather firmer than their Northern competitors and this causes their volume of business to be lighter, although inquiries are good and prospects favor an increased business as soon as buyers and sellers can come to terms. The sales of Lake Superior Charcoal have been rather heavier than usual but by no means compare with the movement in Coke Iron. Charcoal prices are firm. The exceedingly cold weather of the past week has interfered to a considerable extent with shipments of Iron from furnaces at a distance from this territory, and complaints are numerous from consumers with contracts for season delivery, on which they are depending for a regular supply. Quotations are as follows, cash, f.o.b. Chicago.

Lake Superior Charcoal	$16.50 @ $17.00
Local Coke Foundry, No. 1	13.75 @ 14.25
Local Coke Foundry, No. 2	13.25 @ 13.75
Local Coke Foundry, No. 3	13 00 @ 13.25
Local Scotch	14.25 @ 14.75
Ohio Strong Softeners	16.25 @ 17.00
Southern Coke, No. 2	13.35 @ 13.60
Southern Coke, No. 3	13.00 @ 13.25
Southern, No. 1, Soft	13.35 @ 13.60
Southern, No. 2, Soft	13.00 @ 13.25
Southern Gray Forge	12.60 @ 12 90
Southern Mottled	12.50 @ 12.75
Tennessee Charcoal, No. 1	16.50 @ 17.50
Alabama Car Wheel	19.50 @ 20.50
Coke Bessemer	14.00 @ 14.50
Hocking Valley, No. 1	17.00 @ 17.50
Jackson County Silvery	17.00 @ 17.50

Bars.—Only a small trade is in progress, the largest transaction recently made having been one of 500 tons for a wagon maker. There are plenty of inquiries, but buyers are slow to close, and use all sorts of arguments to beat down prices. Considerable car work is still in prospect, and the demand from that source is expected to be heavy. The general quotation on Bar Iron is 1.60¢, Chicago, half extras, but on good specifications this price can easily be shaded. Soft Bar Steel is in very steady demand, but prices show a wide range according to the reputation of the mill and the quality of the product. Ordinary Steel is quoted at 1.70¢, subject to concession on good specifications, while the best grade from the best-known makers finds fair sale at 1.77½¢. Prices from store are still quoted at 1.75¢ @ 1.80¢ on Bar Iron and 1.80¢ @ 1.90¢ on Soft Bar Steel.

Structural Material.—Business is very quiet in this line, and while a great deal of figuring is being done on prospective business, there is very little now being closed. More building prospects of considerable magnitude are coming forward, making prospects still better for the new season. Mill lots of Beams are quoted at 2.17½¢ @ 2.25¢, Chicago, which are the asking prices by the mills represented here; Angles and Universal Plates, 1.90¢ @ 2¢; Sheared Plates, 1.90¢ @ 1.95¢.

Plates. — Manufacturers' agents and dealers alike report a quiet week. The demand for Plates now appears to be confined almost entirely to repair work and very little new business is under consideration. Mill shipments of Tank Steel, Chicago delivery, continue to be quoted at 1.90¢ @ 2.00¢, with other grades at the usual relative difference. Store prices continue as follows: No. 10 to 14 Iron or Steel Sheets, 2.35¢ @ 2.60¢; Tank Steel, 2.25¢ @ 2.40¢; Shell, 2.40¢ @ 2.60¢; Flange Steel, 2.70¢ @ 2.90¢. Tubes are quoted at 60 % off.

Sheets. — General trade is light on Black Sheets, but a few large consumers have placed contracts for their requirements to a limited extent. No. 27, Common Sheet Iron, is selling at 2.85¢ @ 2.90¢ from mill for Chicago delivery, and Steel Sheets at 3.00¢. Galvanized Iron is moving in a moderate way only, in consequence of the very severe weather, which has checked outdoor operations. Mill prices are steady at 70 and 7½ % discount for Juniata, with small concessions to large buyers. Jobbers quote 70 % off. Copper Sheets are quiet but firm at 30 % off.

Merchant Steel.—A much more cheerful tone pervades this branch than most others. Several houses report a heavier business than last January and also larger than up to the corresponding date in December. Consumers and jobbers are both buying quite freely from the manufacturers and prices arefirm at 2¢ @ 2.20¢, Chicago, for best grades of Open-Hearth Spring and Machinery Steel from mill. Ordinary Tool Steel is unchanged at 6¢ @ 7¢, according to quantity.

Rails and Track Supplies.—Nothing new has occurred in this line, manufacturers of Rails reporting the outlook fully as good as at this time last year. Prices are unchanged at $30 @ $32 for standard sections, according to quantity, terms of payment and place of delivery; Iron and Steel Splice Bars, 1.65¢ @ 1.75¢; Track Bolts, with hexagon nuts, 2.60¢ @ 2.70¢; Spikes, 2¢ @ 2.05¢.

Old Rails and Wheels.—A bid of $18.25 was refused by a railroad company for 1200 tons of Old Iron Rails. This is hardly to be regarded as an indication that prices are firm at that price, but merely that some belated consumer desired an addition to his supply, as all the dealers concur in the statement that they would not pay even $18 and take the chances of being able to make a speedy sale to any consumer here or in territory within reach of this market. The railroad companies, however, are holding on to their Rails in the hope that they may be able to realize higher prices later in the winter. Old Steel Rails have slumped and are now quoted at $11.50 for short pieces and $13.25 for long lengths. Old Car Wheels are apparently scarce and consumers are inquiring for them, which has had the effect of stiffening values to $15.25.

Scrap.—Dealers report very little demand for this class of material, but are not inclined to reduce prices, believing that the very cold weather will check accumulation of country Scrap and thus

enable them to realize full prices later on when the mills have used up their stock. Dealers' quotations per net ton are as follows: No. 1 Railroad Forge, $16; No. 1 Mill, $10.50; Heavy Cast, $11 @ $11.25; Cast Borings, $6.25; Wrought Turnings, $10.50; Malleable Cast $10; Horseshoes, $16.50; Axles, $20; Pipes, $10; Fish Plates, $17.50; Mixed Steel, $10.50 gross ton.

Metals.—Lake Copper is slightly weaker and is now quoted at 12¼¢ for mill lots and 12½¢ for small lots. Casting Copper is in quite good demand, and the price is well maintained at 11¾¢ for carloads and 12¢ for small lots. Spelter is very quiet and quoted at 4.15¢ @ 4.20¢ for carload lots.

A. M. Crane has been appointed assistant general sales agent of the Illinois Steel Company, Rookery Building, Chicago. Mr. Crane has been connected with the sales department for the past year, having charge of Billets, Angles and Wire Rods.

Philadelphia.

Office of *The Iron Age*, 226 South Fourth St., PHILADELPHIA, Pa., January 17, 1893.

The extremely severe weather has interfered with business, particularly in outside operations, but all the same there is a steady accumulation of work which will ultimately result in great activity. There is an unusual amount of inquiry for prices, and business could be had in large blocks providing buyers could get in on pretty near to their own terms. Bids are at figures which sellers cannot possibly meet, however, so that the amount actually closed is only of moderate proportions, although for such lots as are taken sellers manage to get about the same figures as have been ruling during the past two or three weeks. The strong feature in the situation is the absolute certainty of a large business later on, and this it is believed is bound to stiffen prices. Meanwhile manufacturers in all departments state that they cannot possibly get out whole at the low figures frequently quoted, and that they must have more money for their goods or stop doing business. There is no doubt that these assertions mean something under present conditions. Everything possible has been done to minimize cost, and, as there is no room for further reductions, it necessarily follows that there must be better prices or reduced supply. The latter alternative appears to be uncalled for, except perhaps in the case of obsolete plants or unfavorable locations, as material will be wanted, and in a few weeks time, at better prices possibly than any one would think of quoting to day. Nevertheless it is the present and the next three or four weeks that the trade wish to tide over, and it is with that object in view that prices are as low as they are to-day. The future is full of encouragement, however, but a strict adherence to facts will not permit us to say that prices are any better than they were a week ago, but there is more resistance to anything that looks like further concessions.

Pig Iron.—There is a firmer tone, and while it can hardly be said that there is any better prices, it is certainly true that there is a disposition to decline business, which is offered on less favorable terms than heretofore. In other words, bottom appears to have been touched, and the tendency is a little toward an upward movement. Quite a large proportion of good Irons are held at full quoted rates, and are not to be had on any other terms, but as usual there are some who are willing to accept inside figures, although the offerings from this class are neither numerous nor important. To an outsider it appears as though a slight upward movement is among the possibilities, and that it may develop into a very strong movement is not altogether improbable, the conditions being more favorable than they have been for some time past. Prices are extremely low, and while Ores may be a little cheaper, it is hardly possible to make Pig Iron to sell below to day's figures. The statistical position is good: stocks are not increasing, neither is production increasing. Consumption is beginning to pick up and promises to increase considerably in the near future, so that the chances in the long run seem to be decidedly in sellers' favor. There are some adverse influences, such, for instance, as the low price of Bessemer Pig in the West and the consequent competition from that quarter in the more advanced product, such as Billets, Plates, Shapes, &c., and until there are some signs of a reaction it will be very difficult to score much of an improvement in the Eastern markets. The basis for expecting an improvement, however, is, as we have already stated, the probability of an enormous demand, but of course until it takes actual shape prices will doubtless remain as they are to-day, unsettled—refusing to go down and hard to work up, and liable to move fractionally in either direction, according to whatever developments may be forthcoming within the next three or four days. Meahwhile for Philadelphia and nearby deliveries prices are about as follows, and 25 to 30 cents less on some brands having an advantage in deliveries at points such as Harrisburg, Baltimore, &c.

American Scotch, No. 1x	$17.00	@	$17.25
American Scotch, No. 2x	16.00	@	16.25
Standard Penna. (Lake Ore), No. 1x	14.75	@	15.25
Standard Penna. (Lake Ore), No. 2x	14.25	@	14.50
Standard Virginia, No. 1x	14.75	@	15.00
Standard Virginia, No. 2x	14.00	@	14.25
Virginia and Southern, No. 1x. Soft	14.25	@	14.50
Virginia and Southern, No. 2x. Soft	13.25	@	13.50
Standard Penna. and Virginia Forge	13.00	@	13.25
Ordinary Forge	12.50	@	12.75

Bessemer and Low Phosphorus Pig.—There is very little doing and prices are purely nominal at $15.50 @ $15.75 at furnace and $17.50 @ 17.75 for strictly good qualities.

Steel Billets.—There is not much disposition to make offers for large lots, and business is mostly confined to small hand-to-mouth transactions on which sellers try to get $24.25 @ $24.50, delivered. There is no difficulty in buying good-sized lots at $24, delivered at Schuylkill Valley points, and bids from the right kind of parties would not wait long for acceptance at $23.75, but large buyers appear to be quite indifferent and are not inclined to make offers unless at prices which makers find it impossible to accept.

Steel Rails.—There is a considerable amount of inquiry, but there is nothing absolutely closed beyond the usual run of small orders. Prospects are supposed to be good, but there is no probability of large orders individually, as buyers feel pretty well satisfied that they can get all the Rails they want and at whatever time suits them, hence there is no disposition to enter into long engagements, particularly as prices are not likely to vary from the present quotation of $29, f.o.b. cars at mill.

Bars.—The demand is about of the usual character, but prices are weak and unsatisfactory as ever. Buyers of good sized lots can almost name their own terms, and prices are mentioned as having been accepted which appear to be incredibly low, but they go all the same, and without any immediate prospect of a rally. General quotations in the city are from 1.65¢ to 1.70¢, and about 1.60¢ to 1.65¢ at interior points, and in some cases at less, but all depends on the order.

Skelp.—There is plenty of inquiry but very few sales, as manufacturers find it impossible to meet the prices offered by consumers. Quotations under such conditions can hardly be given, but it is difficult to find buyers unless at a considerable shading from 1.60¢.

Plates.—There is quite an active demand from the smaller class of consumers, and leading mills appear to be comfortably employed. Competition is as sharp as ever, and until there is more or less of an accumulation of orders prices are not likely to show much improvement. There is an enormous business in prospect, but the possibility of delays and postponements leads manufacturers to look sharply after the bird in the hand rather than the one in the bush. Nevertheless, the various projects must come to a definite conclusion some time, and at least some of those now under consideration must come soon, so that there is every reason to expect a period of great activity during the spring and early summer months. In Cramp's shipyards alone inquiries are out for bids on upward of 20,000 tons of material, and as the contracts for the vessels are definitely closed it follows that bids for the material must also be taken up without very much delay. In other departments, such as elevated railways and architectural work, the demand must be very large, so that the future is bright enough, but it is the few weeks between times that needs bridging over. To secure business of this class extremely low figures are quoted, although in a general way the following fairly represents the market:

	Iron.		Steel.
Tank Plates	1.80 @ 1.90¢	1.85	@ 1.90¢
Shell		2.10	@ 2.20¢
Flange	2.70 @ 2.90¢	2.40	@ 2.50¢
Fire Box	3.00 @ 4.00¢	2.60	@ 2.70¢
Special qualities		3.25	@ 3.75¢

Structural Material.—The remarks in the preceding paragraph apply equally under this heading. Some of the mills are already very full of work, and there is not the least doubt that they all will be as soon as it becomes possible to go on with building operations. Meanwhile prices are a little irregular and on desirable orders somewhat lower than general quotations, which are about as follows: Beams, Channels or Tees, 2¢ @ 2.20¢, according to size of order; Angles, 1.85¢ @ 1.95¢; Universal Plates, 1.9¢ @ 1.95¢.

Sheets.—There is a very fair inquiry, but at prices which very few feel inclined to accept. Occasionally parties may be found willing to enter a large order on terms offered, but those who are determined to maintain their reputation for quality have to let the business go elsewhere. Nominal quotations for small lots, best makes, are about as follows, but on large orders very considerable concessions are necessary to secure business:

Best Refined, Nos. 14 to 20	2.75¢ @ 2.85¢
Best Refined, Nos. 21 to 24	2.90¢ @ 3.00¢
Best Refined, Nos. 25 to 26	3.15¢ @ 3.20¢
Best Refined, No. 27	3.30¢ @ 3.40¢
Best Refined, No. 28	3.40¢ @ 3.50¢

Common, ¼¢ less than the above.

Quotations given as follows are for the best Open-Hearth Steel, ordinary Bessemer being about ¼¢ lower than are here named:

Best Soft Steel, Nos. 14 to 16	2¾¢ @ 2⅞¢
Best Soft Steel, Nos. 18 to 20	3¢ @ 3⅛¢
Best Soft Steel, Nos. 21 to 24	3¼¢ @ 3⅜¢
Best Soft Steel, Nos. 25 to 26	3⅜¢ @ 3½¢
Best Soft Steel, Nos. 27 to 28	3¾¢ @ 4¢

Best Bloom Sheets, ¼¢ extra over the above prices.

Best Bloom, Galvanized, discount....70 and 5 %

Old Material.—A better inquiry and somewhat better prices appear to be the general tone of the market. Steel Scrap is specially in demand, but almost anything of good average quality commands prices about as follows: Old Iron Rails, $18 @ $19, delivered; Old Street Rails, $19 @ $20; Old Steel Rails, $15 @ $16; No. 1 Railroad

Scrap, $16 @ $16.50, Philadelphia, or for deliveries at mills in the interior, $16 @ $17, according to distance and quality; $8 @ $9 for No. 2 Light; $11 @ $12 for Machinery Scrap; $11 @ $12 for Wrought Turnings; $8 for Cast Borings, and nominally $22 for Old Fish Plates, and $13 @ $14 for Old Car Wheels.

The partnership between Edwin R. Mann and Frank Samuel, trading as E. R. Mann & Co., expired by limitation on January 10. Mr. Mann with Mr. Pollock continues the business as Iron commission merchants at the old place of business, Mr. Frank Samuel continuing in the same line in his own name at 136 South Fourth street, immediately opposite his former place of business.

St. Louis.

Office of *The Iron Age*, Bank of Commerce Building, ST. LOUIS, January 16, 1893.

Pig Iron.—The market is quiet, and sales reported were, generally speaking, small. The only purchase which attracted any attention was made by a local mill, and amounted to 1000 tons of Coke Iron for delivery during the next 90 days. Large consumers are exhibiting an unusual amount of caution and are placing their orders for small quantities, and then only after a great amount of figuring. Prices are not as firm as they were during the latter part of October and early November, but with a decreased furnace product for December, and an improved demand, the prospect for a steady adherance to present prices is assured. For ordinary quantities we quote as follows for cash, f.o.b. cars St. Louis:

Southern Coke, No. 1 Foundry,	$14.25 @ $14.50
Southern Coke, No. 2 Foundry,	13.00 @ 13.50
Southern Coke, No. 3 Foundry,	12.50 @ 12.75
Southern Gray Forge	12.00 @ 12.25
Southern Car Wheel	18.25 @ 18.75
Lake Superior Car Wheel	18.00 @ 18.50
Ohio Softeners	16.25 @ 17.00
Missouri Charcoal, No. 1 Foundry	14.25 @ 15.00

Bar Iron.—The demand is light and mills are becoming anxious as to how they shall fill their order books. Prices are not as firm as they were and 1.60¢ is now an open quotation and even at that price there is not much business doing. Jobbers' price is 1.80¢ from store, which it is believed is pretty generally adhered to.

Barb Wire.—The week under review was a quiet one so far as the sale of Barb Wire was concerned. The extreme cold weather prevailing throughout the entire Western country has had a bad effect on the sale of Barb Wire and in the absence of any large business prices are unchanged as follows: Painted from mill in carload quantities $2.15 @ $2.20, Galvanized $2.60 @ $2.65.

Wire Nails.—The remarks made concerning Barb Wire are equally applicable to Wire Nails. Mills are anticipating a heavy spring trade and are making all necessary preparations to meet it. Mills quote $1.60 for carload quantities and would shade this price 5¢ per keg for exceptionally large orders.

Freight Rates.

Pig Iron	Per ton.
Birmingham, Ala., to St. Louis	$3.25
Chattanooga, Tenn., to St. Louis	3.00
Sheffield, Ala., to St. Louis	2.80
Barb Wire and Wire Nails.	**Per cwt.**
Pittsburgh, Pa., to St. Louis	22¢
Cleveland, Ohio, to St. Louis	18¢
Anderson, Ohio, to St. Louis	14¢

(By Telegraph.)

January 18, 1893.

Pig Lead.—The demand for this metal is of a hand-to-mouth character and values remain unchanged at 3.57½¢ @ 3.60¢. Offerings are made for January and February delivery at 3.57½¢ without any business resulting.

Spelter.—This metal is offered for delivery during the next three months at 4.05¢. There is very little business doing and there is not much in the way of encouragement for the immediate future. Statistics at hand indicate the production for 1892 of 87,400 tons, which is an increase of 6,567 tons over 1891.

Cincinnati.

Office of *The Iron Age*, Fourth and Main Sts., CINCINNATI, January 18, 1893.

(By Telegraph.)

There has been some increase in the volume of business during the week, but it does not indicate any increase in the consumption in Pig Iron. Some Eastern car works, which had closely used up the material on hand, have been in the market and have bought about 25,000 tons of No. 2 Foundry and Southern Charcoal Car-Wheel Iron for delivery the first six months of this year. These prices were on the basis of $9.50 for No. 2 Foundry and $16 for Car-Wheel, f.o.b. Birmingham, which are the same price as are current for spot delivery for Standard Irons, although for small lots of No. 2 Foundry $9.75 is more generally obtained. There is little doing in Gray Forge, probably because the furnaces hold it at $9, which is above the views of buyers, but there is an occasional sale of some outside iron at $8.75, and the demand does not seem to be urgent at this price. The current consumptive demand in one to five carload lots keeps up well and seems to be somewhat enlarged, although the aggregate of such sales for the week would surely be more than 10,000 tons. It is confidently expected that the buying already commenced will be supplemented by demands from other quarters, as it is known that consumers are carrying less than their customary stocks of Pig Iron. Quotations are as follows:

Foundry.

Southern Coke, No. 1	$13.75 @ $14.00
Southern Coke, No. 2	12.25 @ 12.50
Southern Coke, No. 3	12.00 @ 12.25
Ohio Soft Stone Coal, No. 1	16.00 @ 16.50
Ohio Soft Stone Coal, No. 2	15.00 @ 15.50
Mahoning and Shenango Valley	15.75 @ 16.75
Hanging Rock Charcoal, No. 1	19.15 @ 19.50
Hanging Rock Charcoal, No. 2	18.60 @ 19.00
Tennessee and Alabama Charcoal, No. 1	16.50 @ 17.00
Tennessee and Alabama Charcoal, No. 2	15.50 @ 16.00

Forge.

Gray Forge	11.50 @ 11.75
Mottled Neutral Coke	11.25 @ 11.50

Car Wheel and Malleable Irons.

Standard Southern Car Wheel	18.75 @ 19.00
Lake Superior Car Wheel and Malleable	17.75 @ 18.00

Louisville.

January 14, 1893

The demand for Iron is improving, and there will be quite a number of buyers in the market during this month. Inquiries are quite numerous and for good-sized amounts instead of the usual carload orders. Furnaces feel that present prices will be maintained, and that the dullness that has existed during December is but the usual stagnation that occurs each year at this period. Consumers coming on to the market for several months' supply so early in January it is felt by them is a good indication of their position. It is hardly thought that there will be any improvement in prices immediately, but the demand will be strong enough to maintain present figures. We quote for cash, f.o.b. cars Louisville:

Southern Coke, No. 1 Foundry	$13.25 @ $13.50
Southern Coke, No. 2 Foundry	12.00 @ 12.25
Southern Coke, No. 3 Foundry	11.50 @ 11.75
Southern Coke, Gray Forge	11.25 @ 11.50
Southern Charcoal, No. 1 Foundry	15.00 @ 16.00
Southern Car Wheel	17.50 @ 17.75

Pittsburgh.

Office of *The Iron Age*, Hamilton Building, PITTSBURGH, January 17, 1893.

The situation in the Iron and Steel trades as we find it to-day is certainly discouraging, both as regards volume of business and prices, and it would seem from the attitude of buyers that the low prices now ruling have come to stay. It goes without saying that prices on all kinds of Raw and Finished Material, without a single exception, are much lower than ever before, but notwithstanding that this is the case, buyers regard the market with supreme indifference and continue to buy for their immediate wants only, believing that when they are ready to go in the market again they can buy to as good or better advantage than before. There is no denying the fact that for considerable time past this hand-to-mouth buying policy has been a wise and profitable one, but the question arises, will it continue so? While there are no indications just at present of a betterment in prices in the near future, it has happened before and may occur again that the long-expected turn will come when least expected. It is universally conceded that it is a good time to buy an article when it is selling at a price that about represents the cost of making it. That this is the condition of many Iron and Steel products at this time is undeniable. Mahoning Valley furnaces selling Bessemer in this market at the present time do not realize over $12.90 at the furnace for it, and where commissions are paid less than this amount is obtained. For Gray Forge the figure is $11.65 or less, and it is needless to say that at these prices little or no profit is realized. Billets are very little better, although at $21.50 at mill a fair profit can probably be realized under favorable conditions. The same is true of Rods, which are ruling at $30 at Pittsburgh, but which sold recently at less than that price, while Wire Nails at $1.35 @ $1.40 are certainly close to cost mark. Other lines might be mentioned, but the above is sufficient to show that on nearly everything selling prices are very close to cost mark, and it would seem that buyers cannot go very far astray in placing orders more freely than they have been doing for considerable time past.

Pig Iron.—The conditions governing this branch of the trade continue unchanged. Since the first of the year inquiries are a little better, but actual business moving continues to be confined to small lots. However, negotiations are under way involving several round lots of Bessemer, and if the deals go through it is believed that other buyers will be willing to enter the market. The impression is general that Bessemer Iron at $13.50 is probably as low as it will go, and while large blocks involving 10,000 or 15,000 tons might shade this price under very favorable conditions, a number of furnace owners have refused to entertain offers of less than $13.50, and would probably stock their Iron in preference to selling it at less than that price. In regard to Gray Forge, the above remarks also apply, and it is not believed that $12.25, Pittsburgh, would be shaded unless some conditions out of the ordinary prevailed. On the other hand, it is the impression that while Steel continues low in price it will be difficult to obtain much higher figures for Gray Forge. Puddling is fast being discarded, some concerns having abandoned

it entirely, and this means, of course, a decreased consumption of this kind of Iron. Only a limited amount of Foundry is changing hands at $14, Pittsburgh, for No. 1, and $13 for No. 2, but these prices are, no doubt, shaded occasionally. Prices may be fairly quoted as follows:

Neutral Gray Forge	$12.25 @	.....	cash
All-Ore Mill	12.50 @	12.75,	"
No. 1 Foundry	14.00 @	14.10,	"
No. 2 Foundry	12.00 @	13.00,	"
Charcoal Foundry No. 1	19.00 @	20.00,	"
Charcoal Foundry No. 2	18.50 @	19.00,	"
Bessemer Iron	13.50 @	13.60,	"

We note a sale of 1000 tons of Bessemer equal deliveries in January and February at $13 50, Pittsburgh, and 3000 tons of Gray Forge equal deliveries, January, February and March at $12.25 Pittsburgh.

Billets.—For the week under review we can report inquiries as more numerous, but as yet comparatively few actual sales have been made. However, some fairly large deals are in negotiation with good prospect of being closed within a few days. A number of mills, both here and in the Wheeling District, have declined firm offers of $21.25 at mill, and several concerns are refusing to consider any business at less than $21.75 at mill; those, however, being well sold up for this quarter, and willing to take their chances on prices for the second quarter of the year. Probably a disturbing feature in the situation is the fact that some contracts are in existence between dealers and makers, necessitating the marketing of a considerable tonnage of Billets every month, thus giving the advantage to buyers. Prices continue to range from $21.50 to $21.75 for Steel for this quarter, and while makers have refused to go lower than $21 50 it is also true that buyers have declined to place orders at that figure during the past week. Edgar Thomson continues on Billets.

Ferromanganese.—As announced last week, several sales of foreign Ferromanganese have been made in this market recently at a price less than $60, f.o.b. cars Pittsburgh. This has had the effect of weakening the home product to some extent, and we now quote Domestic at $60.50 for 80 %, f.o.b. cars Pittsburgh. We note a sale of 100 tons for delivery during this and next month at the above price.

Steel Rails.—The Edgar Thomson mill continues on Billets. Prices are without change, and we continue to quote $29 at mill for standard sections.

Muck Bars.—In addition to the several lots of Muck Bars sold to Pipe and Tube makers in this city, as noted in our report of last week, several more lots have changed hands at prices ranging from $24 to $24 25 for best grades of Muck Bars delivered at buyers' mill. Several other deals involving a fair tonnage are pending, and will probably be closed within the next week or ten days. No. 1 Muck Bars may be fairly quoted on a basis of $24 @ $24.25, Pittsburgh, with the first-named as the ruling price.

Structural Material.—The extreme cold weather which we have experienced for the past three or four weeks has interfered with business to considerable extent, and very little new business has been placed within the past week or two Prices continue weak and reports are going of sales of Beams on a basis of 1.80¢, Pittsburgh, but makers here deny making any such low prices. For small lots prices may be fairly quoted as follows: Beams and Channels, 2¢ @ 2.10¢; Angles, 1.65¢ @ 1.75¢; Universal Mill Plates, 1.70¢ @ 1.75¢; Z Bars, 1.85¢ @ 1.90¢, and Tees, 2.10¢ @ 2.15¢.

Steel Plates.—Trade continues quiet, but a fairly large order is reported as being in the market which will probably be closed before this week is out. Where anything like large lots are involved extremely low prices continue to be quoted, but for small lots the following prices about represent the market: Flange, 2.05¢ @ 2.10¢; best Fire Box, 3.40¢ @ 3.50¢; Tank, 1.70¢ @ 1.75¢; Bridge Plates, 1.90¢ @ 2¢; Shell, 1.95¢ @ 2.10¢.

Wire Rods.—The shutdown of the Joliet Rod mill of the Illinois Steel Company has favorably affected this market to some extent, and, should the shutdown continue, makers claim that they will be able to secure better prices for Rods in the near future. As noted last week, Pittsburgh makers have recently sold several lots of Rods, but prices at which these sales were made have not been disclosed, but are understood to have been very low. The market is fairly represented by the quotation of $30 at maker's mill for prompt delivery.

Merchant Steel.—Considering the season of the year and the extreme cold weather prevailing for some time, business is holding up remarkably well, and a number of inquiries are in the market, representing considerable tonnage. Prices have undergone no change since our report of last week, and we quote as follows: Open-Hearth Spring and Machinery at 2¢ @ 2.15¢; Machine Straightened Tire Steel, 2¢; Ordinary Tire Steel, not straightened, 1.80¢ base; Sleigh Shoe, flat bars, 2¢; Plow Steel, 2¢ @ 2.10¢, and Tool Steel, 6¢ and upward.

Sheets.—A moderate demand is reported for Black Sheets and concerns rolling Sheets for tinning purposes are securing considerable trade. Considerable improvement in the demand is expected in a very short time, as several large buyers are understood to be about ready to place their season contracts. We quote common Black Sheets as follows: No. 24, 2 55¢ @ 2.60¢; No. 26, 2.65¢ @ 2.70¢, and No. 27, 2.75¢ @ 2.80¢. For Soft Steel Sheets from 5¢ to 10¢ additional on the above prices is obtained. A fair demand is reported for Galvanized Sheets and discounts are unchanged at 70 and 7½ % and 70 % and 10 %, according to quantity for Best Bloom.

Bars.—A fair amount of new business has been placed since the opening of the year, and a number of mills in this city that were running only about half their capacity are now in full operation. The entire plant of the Pittsburgh Forge & Iron Company was put on double turn on Monday morning, the 16th inst. The very cold weather is interfering with operations at mills to considerable extent, as it is almost impossible to procure coal owing to the ice which prevents barges from being taken to landings. During last week a number of concerns were compelled to suspend operations for a time until their supply of coal could be renewed. For best grades of Bars 1.60¢ @ 1.65¢ is being obtained. Old Rail and Scrap Bars are bringing from 1.45¢ to 1.55¢. In the Mahoning Valley quotations are based on 1.45¢ for Bars, half extras.

Skelp Iron.—Trade continues quiet, but an improvement is looked for just as soon as the weather will permit outside pipe laying. Owing to the fact that the volume of business is so small, it is almost impossible to give quotations which will correctly represent the market, but for small lots of Grooved Skelp 1.50¢ @ 1.55¢. and for Sheared 1 70¢ @ 1.75¢, four months, or 2% off for cash, about represents prices ruling.

Wire and Cut Nails.—Trade in both Wire and Cut Nails does not show any improvement in either demand or prices, and it is not expected that there will be much improvement until buyers commence to place their spring orders. For Wire Nails $1.40 in carload lots is still quoted, but this price continues to be shaded where large lots and desirable specifications are involved. Prices on Cut Nails have not changed since our last report, and we continue to quote these at $1.42½ @ $1.45, f.o.b. in Wheeling district.

Scrap Iron and Steel.—The market on No. 1 Railroad Wrought Scrap is considerably better than for some time past, and prices have advanced from 50¢ to $1 ℔ ton. This is due principally to a shortage in the supply, and mills having put off buying until the last moment, dealers have taken advantage of the situation and numerous sales of No. 1 Railroad Scrap have been made within the last week or two on a basis of $16 @ $16.50 ℔ net ton delivered in the Mahoning Valley. Cast-Iron Borings are looking up to some extent, and we now quote these at $8 ℔ gross ton. Wrought Iron Turnings are in fair demand at $10 75 ℔ net ton. As noted last week, Leaf Springs are in good demand, and being somewhat scarce are slightly higher in price, and we now quote these at $21 ℔ net ton. Coil Springs are dull at $17.50 ℔ gross ton. Old Iron Axles are in fair demand, and we quote these at $21 ℔ net ton, delivered in Mahoning Valley. We note a sale of 250 tons of No. 1 Railroad Wrought Scrap at $16.50, delivered in Mahoning Valley for prompt shipment. We also note a sale of 75 tons of Leaf Springs at $21 ℔ gross ton.

Old Iron Rails.—We are advised that short Steel Rails are in good demand, and there is quite a shortage of these just now, due principally to the fact that railroads are unable to make repairs. Within the last week or two prices have looked up considerably, and we now quote short Steel Rails, less than 6 feet in length, at $16, while long and miscellaneous lengths are ruling at $15.50. Old Iron Rails are in fair demand, and are held at $20, delivered in Mahoning Valley. We note a sale of 500 tons of Old Iron Rails at $20, delivered in the Mahoning Valley, and 200 tons at $19.75, same delivery.

The partnership heretofore existing between Preston & Humphreys, Iron and Steel brokers, Lewis Block, Pittsburgh, Pa., has been dissolved by the retirement of W. Y. Humphreys. The business will be continued at the same location by Percy Preston, under the name of Preston & Co.

W. Y. Humphreys, formerly connected with Preston & Humphreys, Iron and Steel brokers, Lewis Block, Pittsburgh, Pa., has associated himself with F. F. Vandervort, J. H. Stewart and Hermon Griffin, the new firm being known as Humphreys, Vandervort & Co., who will engage in the business of Iron and Steel brokers, with offices in the Lewis Block, Pittsburgh.

Detroit.

WILLIAM F. JARVIS & Co. of Detroit, Mich., under date of January 16, 1893, write: The market certainly seems to have opened up with a good demand; in fact, has been decidedly active both for Pig Iron and Finished Material during the past week. One large transaction for Southern Charcoal Iron was consummated here, together with several orders which had been under treaty for Lake Superior Charcoal, being placed at ruling figures. Buyers seem to have become aware that it is useless to attempt to lower the market for Lake Superior Charcoal. The position of those ready to deliver Iron prior to the opening of navigation is a substantial one. They have the advantage for Eastern points for all Rail delivery. Inquiries for a very large tonnage of Southern Iron also came to the surface, and in all prob-

ability orders will be placed some time within the present week. This grade of Iron showed more weakness than anything else on the list. Weakness was also seen in the price of manufactured Iron, and surprisingly low prices were made on Channels, Axles and Angles for forward delivery, while a little better figures were obtained for prompt delivery where mills were able to furnish in this way. We place the list of figures on Pig Iron as follows:

Lake Superior Charcoal, all numbers	$16.50 @ $17.00
Lake Superior Coke, Bessemer	15 00 @ 15.50
Lake Superior Coke, Foundry, all ore	16.25 @ 16.75
Standard Ohio Blackband (40 per cent.)	16.00 @ 16.50
Southern No. 1	14.50 @ 15.00
Southern Gray Forge	12.50 @ 13.00
Jackson County (Ohio) Silvery	17.50 @ 18.00

Metal Market.

Copper.—A few parcels of Lake Superior Ingot have been sold at down to as low as 12¢ ℔ lb, net cash, from second hands. All told, probably 75,000 pounds went at that and a price very close to it. Several small lots have been parted with by producers at 12¼¢, regular terms, and there was more than a vague possibility that additional purchases could be made at the same rate, although 12¼¢ is quoted as "the market" by the large concerns. In Casting Copper not enough business has transpired to fairly establish market values, and quotations are therefore nominal, at 11¼¢ @ 11½¢ for wholesale quantities. While the market thus remains in a rather flat condition confidence in a better state of affairs ere long seems to be general among sellers. The latter interest argue that the recent accumulation of stock in Europe is due to shipments there on old contracts, including practically all of the defunct French "syndicate" holdings; that weather conditions have been adverse to full average consumption in Europe and America; that despite this fact considerable Copper has been worked up, and that the spring season will witness not only a good movement into the old lines, but remarkably heavy demand for electrical purposes. In the latter connection the rapid extension of the trolley system for street car motive power in various sections of the country is reckoned upon as sure to become an important factor since projected railroads intended to employ electric power are of vast number, while the calculations are at least 3000 pounds of wire to the mile of single track is the minimum consumption in that line. The statistics of production of the world, as outlined in the data given below, may be construed as some offset to the strong features outlined in the foregoing remarks, but the plain fact remains that there is no evidence up to the present time of pressure to sell on the part of large producers.

The monthly production of Copper in the United States since July has been as follows, the first column giving the aggregate return from the reporting mines, which include the principal Lake, Montana and Arizona producers; the second being the metal from pyrites and from a number of smaller outside sources, being estimated:

	Reporting mines. Gross tons.	Outside sources. Gross tons.	Total. Gross tons.
July	9,294	924	10,218
August	10,807	870	11,677
September.	9,710	994	10,704
October	9,668	1,259	10,957
November.	9,888	1,036	10,924
December	9,872	1,174	11,046
Total, six months	59,239	6,287	65,526

The most striking fact in connection with this exhibit is that the production of the reporting mines does not seem to be much affected by the stoppage of the Anaconda, which was heralded with such a blare of trumpets.

The exports of Copper for December were 4486 gross tons, against 3897 gross tons in November.

The principal producers of the Peninsula, Germany, the Cape, Australia, Venezuela and Mexico report monthly to London. Their estimated product before this system of reporting was instituted was 7087 gross tons monthly. The actual product as reported has been:

	Gross tons.
July	6,358
August	6,888
September	5,478
October	6,476
November	6,789
December	7,666
Total six months	39,655

This shows that the foreign mines are now only 2869 tons behind the estimated production as compared with 3446 tons at the end of November.

Pig Tin.—The speculative branch of the market has been somewhat pyrotechnic in its movements. Operators who make and break prices as the relation of "long" and "short" interest may dictate figured conspicuously as buyers for several days, and, with the aid of all that could be brought to bear in the way of gossip regarding the duty prescribed in the McKinley tariff act, forced quotations up to 20½¢ for January and correspondingly high for later deliveries, making an advance of about ½¢ per pound for the week. Some dealers not prominently identified with the "ring" bought fair quantities of Tin here and made purchases at the primary sources of supply also, as though tired of tailing on to the manipulations of any one interest or individual. Surface appearances were that those purchases served to change the policy of the supposed masters of the market, since not only was their support withdrawn, but some "bear" pressure was brought into play through the agency of convenient brokers. In any event prices weakened shortly after the market had looked strongest, showing about ½¢ decline between Monday and Tuesday. Speculative dealings have involved a total of about 480 tons. Consumption during the first half of January is estimated at about 800 tons, against receipts during the same period of 848 tons. The Metal Exchange makes the shipments from the East in the interval 1750 tons, of which 1450 were to Great Britain and America. Banstead's figures are: 1300 tons to Great Britain, 200 tons to America, and 300 tons to Continent.

Pig Lead.—Business has been on a very moderate scale during the past week, and nothing has transpired in the way of change in the attitude or disposition of buyers or sellers. In short, it is still a case of extremely indifferent bidding on one side and very reserved offering on the other. Pending developments the nominal price for round lots, prompt or near future delivery, stands at about 3.85¢ for common, while small quantities are held at the usual premium.

Spelter.—No change is observed in the character of the demand from consumers or jobbers in Eastern markets and the business passing is still confined chiefly to lots of a few carloads for early shipment. Offerings by smelters are not particularly urgent, but more than enough to go around comes upon the market, and 4.35¢ @ 4.40¢ stand as full prices for prime Western brands in wholesale quantities.

Antimony.—The market continues slow and easy, with prices standing at about 10½¢ for Hallett's and 10¾¢ @ 11¢ for L. X. and Cookson's.

Tin Plate.—In the absence of any radical change in the prices of Plates or Bars at the last Birmingham meeting, the market on this side of the ocean remains bare of distinctly new feature. Encouraged by current high prices for spot goods and full rates on contracts for next season's pack, canners of vegetables are preparing for heavy work in 1893. It is no secret that more cans have been ordered thus far this month than were taken during the entire month of January last year. However, can makers seem to have covered such sales by prior purchases of Plates for spring delivery, and as there is no unusual demand from other sources, values remain almost stationary for spot goods. We quote as follows: Coke Tins—Penlan grade, IC, 14 x 20, scarce; J. B. grade, do., scarce; Bessemer full weight, $5.35; light weights, $5.10 for 100 lb, $4.95 for 95-lb, $4.80 for 90 lb. Siemens Steel scarce. Stamping Plates—Bessemer Steel, Coke finish, IC basis, $5.60 @ $5.65; Siemens Steel, IC basis, $5.75; IX basis, $6.85. IC Charcoals—Melyn grade, ¼ X assortment, $6.40; Crosses, $8; Allaway grade, any assortment, $5.70; Crosses, $7; Grange grade, any assortment, $5.80; Crosses, $7.10. Charcoal Ternes—Worcester, 14 x 20, $5.70; do., 20 x 28, $11.35; M. F., 14 x 20, $7.75; do., 20 x 28, $13.50; Dean grade, 14 x 20, $5.30 @ $5.35; do., 20 x 28, $10.50 @ $10.60; D. R. D. grade, 14 x 20, $5.25; do., 20 x 28, $10.50; Dyffryn, 14 x 20, $5.50; do., 20 x 28, scarce. Wasters—S. T. P. grade, 14 x 20, $5; do., 20 x 28, $9.75; Abercarne grade, 14 x 20, $4.95; do., 20 x 28, $9.75.

Financial.

The ice blockade at all the principal Atlantic ports, cubes of ice 6 feet thick in Minnesota and the Ohio River frozen from Louisville to its source are among the phenomena that mark a winter of extraordinary severity and betoken a late reopening of navigation, but as yet the effect on trade is scarcely observable. East-bound shipments from Chicago dropped 11,000 tons from about 80,000 tons the previous week and one-third compared with the corresponding week last year, but railway financiers are confident that eventually they will profit largely from the obstruction of rival water routes. Interest in the repeal of the silver law has in no degree subsided, but a sense of relief arises from a conviction that methods will be devised to avert serious embarrassment from the compulsory purchases of silver until remedial legislation can be adopted. The absence of orders for gold shipments, easy money as the result of receipts from the interior, and finally reports from Washington that the Interstate Commerce law would be amended to legalize pooling, also contributed to a better feeling. The withdrawal of New Jersey Central from the coal combination has no immediate effect upon the price of the product, especially while a coal famine is threatened in various directions, but the future remains somewhat obscured. The position of the Lehigh Valley occasions a lively discussion among the stockholders. The Reading people do not believe that the New Jersey authorities will throw Jersey Central into a receiver's hands.

The stock market was irregular. The action of the Bank of France, elsewhere noted, was regarded favorably, as it was supposed to mean a reduced demand for gold, and the market was stronger. One feature was a rise in Manhattan, Consolidated Gas, New York & Northern and Reading, and there was a good demand for Central New Jersey, Lackawanna and the other coal shares, due to rebuying to cover shorts. Whisky and Sugar advanced steadily. There was a sharp advance in Manhattan on a report that the arrangement with the Rapid Transit Commission is almost certain to be carried out. Nothing was known to account for the advance in the Hocking Coal & Iron except the negotiations now under way for the establishment of a Hocking Valley bitu-

minous coal combination. Both on Saturday and Monday transactions were large. The improved tone was in part due to a statement by Mr. Carlisle that by an earnest effort the Silver Purchase law could be repealed at this session of Congress.

Respecting the silver question, the latest advices from a well-informed source in the Senate is that the repeal of the Sherman act at this session is impossible.

United States bonds were quoted as follows:

U. S. 4½s, 1891, extended	100
U. S. 4s, 1907, registered	113¼
U. S. 4s, 1907, coupon	113¼
U. S. currency 6s	107½

Money is decidedly easier, the banks unexpectedly showing, in their weekly statements, the enormous gain of $6,668,000 in surplus, which makes the sum held in excess of legal requirements $15,610,450, the largest amount since August last. The ease of time money is making a better market for commercial paper, but rates have not declined to a perceptible extent. The best buyers are country banks. Foreign exchange closed at $4.87 @ $4.89. One feature was the refusal of the Bank of France to allow interest on consignments of gold in transit from New York. In London gold was in steady demand for Continental countries, especially France, where banks are increasing their reserves. With the prospect of an increased demand for Austria, rates are likely to continue to harden. The circulation of the United States, per capita, according to the latest Treasury statement, is $24.32. The present circulation is $1,610,683,874, against a circulation on January 1, 1892, of $1,588,781,720.

The grain markets have been firm and prices advanced, but the export trade continued moderate. Several large orders for future shipment were reported. Exports of wheat thus far this season are 114,800,000 bushels, a decrease of 22,500,000 compared with the same time last year, while the falling off in corn is still more noticeable. Flour was quite active. Hog products again advanced. In cotton there was more animation, but values drooped. Spot cotton declined about $\frac{5}{16}$ cent. Sugars are firm. Coffee quiet.

The Treasury Department reports that the principal classes of exports from the United States during December show a decrease in the value of commodities exported of $29,023,483 in comparison with similar data for the corresponding month last year. Following are the comparative aggregates:

	1892.	1891.
Provisions	$11,676,400	$12,112,010
Breadstuffs	16,836,820	30,241,803
Cotton	28,050,453	43,276,201
Petroleum	3,638,539	3,877,840

A falling off of nearly $13,500,0 00 in the value of breadstuffs exported last month and $15,250,000 in the exportation of cotton will be noted.

Exports of merchandise from this port for the week were $7,439,000, as compared with $10,161,000 during the corresponding week last year. Imports were $14,000,000.

Coal Market.

Severe weather curtails both production at the mines and shipments to consumers, so that a condition approaching a coal famine threatens many localities. The change of circumstances is so sudden as to have baffled all calculations. Especially is the restricted production enforced for many months past an unexpected source of embarrassment. Happily there are large accumulations at Plainfield, N. J., and other interior points that will be available as soon as transportation is no longer obstructed. Meanwhile consumers will suffer in many instances where the "hand-to mouth" plan has been in vogue, and in some instances manufacturers are compelled to suspend operations for lack of fuel, even in Pennsylvania, comparatively near to the sources of supply. Combine prices nominally prevail, except as to Pea and Buckwheat, which have long been at a premium. In respect to other sizes it is but natural that some dealers where not bound by contracts take advantage of their opportunities. Locally there are several large consumers who are content to obtain fuel regardless of cost. Chestnut Coal is almost out of market. The Reading collieries are again worked to their full capacity.

The total amount of Anthracite Coal sent to market for the nine days ending January 9 was 500,167 tons, compared with 656,720 tons in the corresponding week last year.

The Pennsylvania Railroad is preparing to extend its road from Nanticoke up the west side of the Susquehanna to Plymouth on land acquired by it some years ago. This will enable it to tap a Coal tonnage of over 100,000 tons a month from the collieries of the Lehigh & Wilkes-Barre, Plymouth & Kingston Coal companies, from which it has heretofore been entirely shut off.

Word comes from Washington that the Congressional Investigating Committee will report recommending the passage of the bill heretofore agreed upon by the Commerce Committee, which gives the Interstate Commerce Commission power to keep down freight rates. At Philadelphia it is said that the most serious thing that threatens the Reading to-day is the probable action of the Legislature, which threatens to annul the Lehigh Valley lease. One of the leading financial friends of the Reading system said that the Legislature upon the investigation will find that the Lehigh Valley lease is legal in every point of law.

New York.

Office of *The Iron Age*, 96-102 Reade street, NEW YORK, January 18, 1893.

Pig Iron.—New business is light. During the week the delays in deliveries incident to the cold weather have shown in a striking manner how closely consumers run, how small are the stocks they carry and how generally they have learned to depend upon the furnaces for prompt delivery. We quote Northern brands at $14.75 @ $15.25 for No. 1; $14 @ $14.50 for No. 2; $13 @ $13 50 for Gray Forge, tidewater. Southern Iron, same delivery, $14.75 @ $15 for No. 1; $13.75 @ $14 for No. 2 and No. 1 Soft; $13 25 @ $13.50 for No. 2 Soft; $12.75 @ $13 for Gray Forge.

Spiegeleisen and Ferromanganese.—There have been interesting developments in Ferro. Importers succeeded in capturing last week an order for 300 tons for mill in the Wheeling District at about $59, delivered, equivalent to $56.60, Baltimore. Another order for 750 tons for a Pittsburgh Steel works was captured by an American producer who has hitherto not figured in that market. The result has been a three-cornered struggle in which foreign Ferro had little chance. We quote 80 % Ferromanganese, tidewater, at $57 @ $57.50, and 20 % Spiegeleisen nominally $26 @ $26 50.

Billets and Rods.—There has been very little doing in this market, only small quantities of domestic or foreign Billets having been placed. We quote Steel Billets, tidewater, $24 25 @ $24 75; foreign, $29.25 @ $30; Wire Rods, $32.50 @ $33; foreign Wire Rods, $40 @ $40.50. and Swedish Rods, $54.50 @ $56.

Steel Rails.—Reports are current that quite a number of New England railroads have placed their orders, it being estimated that the aggregate is close to 35,000 tons. Other large contracts for roads running into New York are still pending. They will call for about a like amount. We continue to quote $29 at mill or tidewater, according to location of works.

Structural Iron and Steel.—There are reports current that lower prices have been made for Beams, and there is abundance of testimony that the mills are very hungry for work. Although the outlook for a very large consumption is excellent, the fact remains that comparatively little is coming out at once, so that contracts for prompt delivery are being hunted for vigorously. The majority of the mills seem eager, too, to get some "backbone" orders, so that very close prices are likely to prevail until sellers feel more comfortable. We quote Beams at 2.25¢ @ 2.75¢ for small lots and 2¢ @ 2.25¢ for round lots, according to sizes; Angles, 1.85¢ @ 2¢; Sheared Plates, 1.85¢ @ 2.10¢; Tees, 2.10¢ @ 2.30¢; Channels, 2.10¢ @ 2.20¢, on dock. Car Truck Channels, 2¢ @ 2.10¢. Steel Plates are 1.85¢ @ 2¢ for Tank; 2.10¢ @ 2.25¢ for Shell; 2.40¢ @ 2.65¢ for Flange; 2.5¢ @ 2.75¢ for Marine, and 2.60¢ @ 2.80¢ for Fire Box, on dock. Refined Bars are 1.65¢ @ 1.9¢, on dock; Common, 1.55¢ @ 1.60¢. Scrap Axles are quotable at 1.90¢ @ 2.10¢, delivered. Steel Axles, 1.90¢ @ 2.1¢, and Links and Pins, 2¢ @ 2.20¢; Steel Hoops, 1.90¢ @ 2¢, delivered.

Track Material.—We quote Spikes, 1.90¢ @ 2¢; Fish Plates, 1.60¢ @ 1.65¢; Track Bolts, square nuts, 2.40¢ @ 2.60¢, and hexagon nuts, 2.70¢ @ 2.80¢, delivered.

Cleveland.

CLEVELAND, OHIO, January 16, 1893.

Iron Ore.—The intensely cold weather has seriously interfered with shipments of Ore to the furnaces, only 9000 tons having been forwarded during the past week as compared with 22,000 tons for the corresponding week in 1892. With the Pig Iron market practically lifeless, and prices still declining, it is scarcely to be expected that the trade in Iron Ore will assume formidable proportions, but sales of non-Bessemers in small quantities are reported at about $3 per ton. The amount of these Ores still unsold at Lake Erie ports is very large, and until they have been practically cleared up little will be done in the way of fixing prices for non Bessemers to be mined in 1893. There is absolutely no talk about prices for new ores beyond a general expression of opinion that values will be very low, lower perhaps than every before. Sales of Bessemer Ores on the docks at figures below $4 ℔ ton are said to have been made, but the Ores were somewhat high in phosphorus. The high-grade Bessemers from the head of Lake Superior seem to be well sold up. A small lot was recently sold at $4.80 ℔ ton, f.o.b. cars Cleveland, but little more remains to be placed. Dealers differ widely in their estimates regarding the opening of this year's market, and are watching the movements of the railroad interests intently. A leading furnaceman said to-day that the mine owners must come to them this year and make terms. He anticipates a fairly good season, with prices for good Bessemer Hematites ranging from $3.75 to $4.10 ℔ ton, and with non-Bessemers selling for $2.85 @ $3.15, f.o.b. vessels lower lake ports. Little will be known about prices, however, for several weeks. Any important changes in the Pig Iron situation will affect the Iron-Ore market quickly, and go a long way toward fixing values for the coming season.

Pig Iron.—Bed rock in prices for Pig Iron seems hard to find, for although quotations have seemed to be about as low as

they could possibly go for several weeks past, they still continue to fall. The amount of business done during the past week was rather small, but enough sales were made to warrant a revision in quotations. Bessemer Iron can now be bought for less than $13 65, and quotations are given out as $13.60 @ $13 70, with indications that an offer of $13.55 per ton, f.o.b. cars Cleveland, would bring a good many sellers to the front. Dealers report a few sales "close to $13.60," which may be taken to mean $13.55, Cleveland. Gray Forge is now quoted at $12.40 @ $12.50, Cleveland, with only a slight demand. The actual volume of business for the past ten days has been very small, and there are no indications at hand of an immediate improvement. Foundry Irons are in only slight demand at $14 for No. 1, $13.50 for No. 2 and $13 for No. 3, f.o.b. cars, Cleveland. "It would not be a safe wager that $13.50 would not buy good Bessemer Iron in Cleveland to-day," remarked one of the city's heaviest dealers to-day, and, he added, "I have heard of negotiations for Gray Forge at figures below $12.40 per ton, Cleveland delivery." Just where all this is to end is something about which buyers and sellers in Cleveland do not care to offer a guess.

Muck Bar.—The market shows some signs of improvement, although prices are about the same as for several weeks past. We hear of sales at $24.25 @ $24.50, Cleveland, with the former figure nearer the actual selling price for No. 1 Muck Bars.

Bar Iron.—The mills seem well supplied with orders, and the demand continues fairly good. Dealers quote No. 1 Bars at 1.55¢ @ 1.60¢, and Scrap Bars 10¢ lower.

Barb Wire.—A number of substantial orders have been placed during the past week, and the outlook for an unusually large spring trade is flattering. Prices are quite firm at $2 for Painted and $2.40 for Galvanized, Cleveland.

Old Wheels —A slight improvement in the demand is reported, but prices remain close to $14, Cleveland delivery.

Scrap.—The market is still lifeless, and all in the buyer's favor. No. 1 Railroad Wrought is quoted at $15 @ $15 25; Cast-Iron Borings, $7.25 @ $7.50; Wrought Turnings at $10 @ $10.25, and Cast Scrap at $10.75 @ 11 ℔ ton.

Sheets.—The demand is somewhat light except for special sizes, for which there is a brisk inquiry.

Old Rails.—Old Americans can be had in any desired quantities at $19 50 @ $20 ℔ ton. The demand is slight and dealers are making little effort to find business.

Nails.—Wire Nails have declined another 5¢ ℔ keg and are now quoted at $1.55 ℔ keg in stock. Cut Nails continue at $1.60 @ $1.65 ℔ keg in stock.

Freight —The following schedule of rates on the leading Iron products will remain in force until the annual spring meeting for the revision of freight charges: Pig Iron: Valley points to Cleveland, 60¢ ℔ ton; to Pittsburgh, 60¢. Muck Bar, Blooms, Billets, Scrap, Iron and Steel Rails, Old Wheels, &c.: Valley points to Cleveland, 70¢ ℔ ton; to Pittsburgh, 75¢ ℔ ton; to Boston, $3.10 ℔ ton; to New York, $2.70 ℔ ton; to Philadelphia, $2.10 ℔ ton; to Newark, $2.50 ℔ ton.

The managers of the Norwich line of steamers have awarded to the Bath Iron Works a contract to build another boat of the first class. She will be 336 feet long, 50 feet beam and have two sets of triple-expansion engines for driving twin screws to give her a speed of 20 miles an hour.

Boston.

Office of *The Iron Age*, 146 Franklin St., }
Boston, January 17, 1893. }

Pig Iron.—The demand for Pig Iron in New England continues dull. Brokers and dealers are somewhat disappointed at not getting the brisk demand they expected after the first of the year. Still, when some of the Boston dealers come to examine their books they find that trade is actually as good or better in volume than a year ago. The quiet market is not because the New England foundries are not well employed. They are very busy, in fact, as a rule. But they have not yet used up the Iron they bought late in the fall. Indeed some of the dealers say that they are delivering a heavy volume of Iron, but it is in the completion of orders placed some time ago. Well-informed dealers believe that this state of the market on Pig Iron cannot long continue, for the foundries will be out of stock, and some of the trade predict a good demand inside of 30 days. Quotably there is very little change in Pig Iron for this market. Still the feeling is that, when consumers begin to buy, it will be at slightly easier prices. Southern Iron, delivered in Boston, is quoted at: No. 1, $15.50 @ $16; No. 2, $14.50 @ $15; No. 3, $13 50 @ $14. In Pennsylvania and Western Iron there is little change. The shipping port prices are named by the trade here at: No. 1, $15; No. 2, $14; Gray Forge, $13.50. To these prices the cost of freight and other charges have to be added on spot lots in this market. Other Western Irons are steady, though the tendency of some of the Western furnaces to make Bessemer Iron has caused Boston dealers to drop them altogether. These Irons are quotable, laid down in Boston, at $17.50 @ $19, as to quality and reputation.

Bar Iron.—There is noted a rather better demand for Bar Iron here, though the tendency is toward Steel very largely, as already mentioned. But there are some of the old-time machinists who are still afraid of Steel for shafting, and Iron they will have. Some of the architects are also afraid of Bessemer Steel for building purposes, and they specify Iron. They cannot shake their ideas clear of "Cast Steel," which will break. Such mechanics will have Iron. The fact that so many of the big mills are getting out of making Iron, in favor of Bessemer Steel, is actually likely to make Iron firmer, since it must be had a while longer to please the old style of mechanics. Bar Iron is quotable at 1.70¢ @ 1.75¢ from mill and at 1.80¢ @ 1.85¢ from store for ordinary Refined Bars. Best Bars from Puddled Iron are quotable at 1.95¢ @ 2.10¢ from mill and at 2 10¢ @ 2.25¢ from store. A number of pretty good orders were placed yesterday, the smaller bars to be of Iron and the larger of Steel. Norway and Swedish Irons are firm here, for the reason that the stocks are in few hands, and no more can come forward till well into the spring, or at the opening of navigation from the country where made. This market is quotable at $68 @ $68.50 ℔ ton for Bars and at $70 @ $70 50 for shapes. These are prices for large lots. Small lots would be considerably higher.

Plates.—The demand for Bessemer Steel is good, and a good deal of business is mapping out in a large way. The big contracts for Steel and Plates on the two steamers to be built at Bath, Maine, have not yet been awarded, but all of the figures were to be in early this week, and it was understood that the contracts would be awarded by Wednesday.

Steel Rails.—The Steel Rail demand is bound to be good in New England this season. Nearly a dozen charters are asked for from the Maine Legislature, now in session, all for electric railways from town to town and from towns to cities. If all of these charters are granted, and there is no reason why they should not be, they will call for something like 50 miles of railways; and all must be tracked with Iron as fast as built. The steam roads are also moving toward the purchasing of Rails. It is understood that the New York & New England has lately purchased largely of rails at $29 with a guarantee behind the trade protecting the purchasing party against any decline previous to delivery of the Rails. The Concord road is also reported to have lately purchased a big amount of Rails on about the same conditions as the New York & New England.

But car building is one of the strongest features of the Iron trade at this time. It comes from good authority that one of the largest car-building concerns in New England has already orders to the extent that it cannot take any more—being ordered up to July. It is a fact that the New England railroads have put off the building of new passenger cars about as long as the public was inclined to submit, and that the last move has been in the direction of contracting for cars. The electric roads mentioned above will also require a great many cars. It may be added here that in the vicinity of Worcester, Mass., there are some 40 miles of new electric roads about to be put under contract to be built. The building of cars this season is bound to require an immense volume of Iron.

Structural Iron.—Structural Iron is in good request, though the tendency of prices is easy, for the reason that the mills all want business, and each mill wants the whole. The demand for Southern Pine Lumber, to go into big mills, has not been better in January for years. This comes from the largest houses in the New England trade. It shows conclusively that the Iron part of such buildings is also to be in good request. Dealers state that some good Iron contracts are already placed.

Locomotive building is likely to be prosperous this season as well as car building. I hear that the Rhode Island Locomotive Works have the order for 12 large passenger locomotives for the Boston & Albany road. Six of these are to be six-coupled. The Old Colony people have been unusually busy at their locomotive shops for some time.

Wrought Pipe.—There has been a good demand for Iron Pipe all the fall, the business of steam and hot water heating being good. But lately this part of the trade has begun to fall off a little. Still there is a prospect of a big Water Pipe trade. Many of the cities and towns of Maine and New Hampshire are agitating the question of either new or greatly improved water works. Already some good orders on Pipe are on the market, and more will be coming

The Boston Pipe dealers held a sort of an informal meeting at noon on Tuesday at the upper rooms of J. J. Walworth & Co. About the only matter discussed in relation to business was that of charging cartage on Pipe, and this matter was scarcely finished. But the proposition for a dinner next Monday was decided upon. This is a new departure, but the Pipe trade will dine together.

A machinist is charged in one of our city courts with personating a health officer and, under this guise, entering a factory to inspect machinery with the object of stealing a mechanical idea. The counsel for the defendant contended that lying was not a statutory offense.

The convention of the American Federation of Labor at Albany adopted resolutions retaliating the action of the Knights of Labor, lately in convention at St. Louis, in condemning trade labels, and affirming in substance that the two organizations have "declared war."

British Iron and Metal Markets.

[*Special Cable Dispatch to The Iron Age.*]

LONDON, WEDNESDAY, January 18, 1893.

There has been a further sharp advance in prices of Scotch Pig Iron warrants, with sales recorded at as high as 43/4, from which point very little reaction has taken place. The advance is attributed almost solely to livelier trading between regular operators in the trade, some of whom forced up prices for cash warrants against sellers who have to deliver this month, while letting futures go at a heavy discount. The outstanding warrants have thus been more widely distributed, but settlement of differences on a large number of contracts maturing are being settled privately. While "bear" speculators have thus been obliged to buy or settle differences, consumers' purchases are still confined chiefly to immediate wants. In other warrants there has been little movement, but prices have ruled a shade firmer, with late trading at 35/9 for Cleveland and 46/1½ for Hematite. Stocks in public stores include 337,000 tons Scotch and 30,000 tons Middlesborough. There are at present 69 Scotch and 128 English furnaces in blast.

Bolckow, Vaughan's Elston Steel works shut down on Saturday owing to lack of orders, but work has been resumed at the Rail mill.

In Pig Tin prices an advance of £1. 15/ has taken place during the week, as high as £92. 15/having been reached. The rise was attributed chiefly to American advices. Lack of local support and heavy shipments from the East have since caused a reaction, and the market is at present unsettled.

Copper advanced a trifle and subsequently reacted to £46 for Merchant Bar prompts. The market still suffers more or less from the adverse political conditions in France, and reports from various quarters of depression in the market for some lines of manufactured goods, while the Silver question stands as an obstacle in the way of free movement. European visible supply has increased 337 tons, and spot stock 710 tons since the 1st inst. Deliveries were 400 tons below receipt of new supplies. Chili charters first half of January 1000 tons. Sales of furnace material recently include 150 tons Montana Matte, price not made public. It is reported, also, that 4000 tons of the same class of material has been sold to an American smelter, which transaction practically absorbs present available supply.

The Tin-Plate market has not improved. The quarterly meetings were meagerly attended, and buyers appeared extremely cautious in view of possible revision of the American tariff. Several makers anxious for orders have shaded their former prices somewhat. The Morewood Company have acquired the Burry Tin-Plate works, and will start the same on Black Sheets next month.

Cleveland Pig.—Business slow and the market easy, with makers offering at 36/, f.o.b. shipping port, for No. 3 Middlesborough.

Scotch Pig Iron.—The demand is without improvement, and, while unsettled, prices show very little change.

No. 1 Coltness,	f.o.b.	Glasgow	54/6
No. 1 Summerlee,	"	"	51/
No. 1 Gartsherrie,	"	"	51/6
No. 1 Langloan,	"	"	53/
No. 1 Carnbroe,	"	"	44/6
No. 1 Shotts	"	at Leith	53/
No. 1 Glengarnock,	"	Ardrossan	49/6
No. 1 Dalmellington,	"	"	47/6
No. 1 Eglinton,	"	"	46/6

Steamer freights, Glasgow to New York, 1/; Liverpool to New York, 7/6.

Bessemer Pig.—A slow market still experienced and prices without change. Makers quote 47/6 for West Coast brands, Nos. 1, 2 and 3, f.o.b. shipping port.

Ferromanganese. — There has been more business, but no change in sellers' prices. English 80 % quoted at £11. 11/3, f.o.b. shipping port.

Steel Rails.—Business moderate and chiefly at old prices. Heavy sections quoted at £4, f.o.b. shipping port.

Steel Slabs.—Market very quiet and without change. Bessemer quoted at £4, f.o.b. at shipping point.

Steel Billets.—Business moderate and chiefly at old prices. Bessemer, 2½ x 2½ inches, quoted at £4, f.o.b. shipping point.

Steel Blooms.—Market quiet and prices nominal. Makers quote £4 for 7 x 7, f.o.b. shipping point.

Old Iron Rails.—Holders offer more freely and name lower prices. Tees quoted at £2. 7/6 @ £2. 10/ and Double Heads at £2. 10/ @ £2. 12/6, f.o.b.

Scrap Iron.—Slow business and prices easy. Heavy Wrought Iron quoted at £1. 17/6 @ £2, f.o.b.

Crop Ends.—Market dull and unchanged. Bessemer quoted at £2. 7/6 @ £2. 10/, f.o.b.

Manufactured Iron.—A very quiet market throughout and prices easy but showing no radical change. We quote, f.o.b. Liverpool:

	£	s.	d.		£	s.	d.
Staff. Ordinary Marked Bars	8	0	0	@	.....		
" Common "	6	7	6	@	6	10	0
Staff. Bl'k Sheet, singles....	.....			@	7	10	0
Welsh Bars (f.o.b. Wales)....	5	7	6	@	5	10	0

Tin Plate.—Rather more demand at the end of the week, but no change in prices. We quote, f.o.b. Liverpool:

IC Charcoal, Alloway grade	13/6 @ 13/9
IC Bessemer Steel, Coke finish..	12/0 @ 12/3
IC Siemens " " "	12/3 @ 12/6
IC Coke, B. V. grade 14 x 20.....	12/0 @ ....
Charcoal Terne, Dean grade..	11/9 @ 12/

Pig Tin.—Firmer market to day, but business moderate. Straits quoted at £91. 7/6 for spot and £92. 10/ for three months' futures.

Copper.—Merchant Bars at the close quoted at £45. 17/6 spot and £46. 7/6 three months' futures. Best selected, £50.

Lead.—Market has continued quiet and prices are still rather weak at £9. 12/6 for Soft Spanish.

Spelter.—The market slow and prices irregular, with sales at £17. 17/6 @ £18. for ordinary Silesian.

(*By Telegraph.*)

WASHINGTON, January 18.—All the armor for the new ships for the navy will be nickel steel, and a portion of it will be Harveyized. The new specifications have not yet been prepared *in extenso*. They will be given out to-morrow.

CONTENTS.

HARDWARE.

Condition of Trade.

A VERY SATISFACTORY RESULT of the cold weather which has so generally prevailed is the depletion of the stocks of nearly all winter goods, both in the hands of dealers and manufacturers, thus clearing out some lines which have been, to a greater or less extent, carried over for several seasons. There are also indications of an early movement in general business, and orders are beginning to come in from the smaller trade and from the jobbers in still larger volume. A marked feature of the situation is the confidence which very generally prevails that the season's business will be large. In the matter of prices there is little new to report, the market as a whole not being characterized by an especially strong tone, and yet there have been a good many slight advances, more in the way of the withdrawals of extras than the announcement of new quotations. There is an evident tendency on the part of manufacturers toward a consolidation of their interests, and in more than one important line negotiations are going on to this end, in addition to which there are many rumors current in regard to similar movements in other branches. It will be noted from the reports given below that there is a general confident tone and the expectation of an early and large business.

Chicago.

(By Telegraph.)

The Shelf Hardware trade is opening up very well as traveling salesmen get to work again, but it is not yet in full swing. The resumption of business this year is much slower than last January, and on this account some merchants are inclined to complain, while others on the contrary are exceedingly hopeful and predict a heavy spring trade. The extremely cold weather of the past ten days, which is worse than anything experienced in the Northwest for five years, has interfered with immediate business, and is, therefore, largely responsible for the dullness of which complaints are heard in some directions. Houses making a special drive on Cutlery report a remarkably good trade for the season. Baby Carriages and other summer goods are also beginning thus early to be inquired for. The Heavy Hardware jobbers state that the new year with them has opened up even better than last year. Consumers of Iron and Steel are buying more freely and in larger quantities, showing that their trade is excellent. Prospects are regarded as very bright for the wagon and carriage trade.

St. Louis.

(By Telegraph.)

The demand for Shelf Hardware is unusually good. Out of town dealers are sending in good orders for full lines, showing a good demand. The cold weather prevailing throughout the entire country has stimulated trade in winter goods, and Skates, Stoves, both Oil and Cook, as well as Stove Boards and Stove supplies generally are in good demand. The Southern trade is improving and the West and Northwestern trade is excellent. Wire Nails and Barb Wire are unchanged in price, notwithstanding the rumors which reach us regarding the consolidation, which at this moment we are unable to verify. Cut Nails are in good demand at unchanged prices.

Louisville.

W. B. BELKNAP & Co.—There is not much of interest to report except that business keeps up remarkably well under a protracted cold spell, the like of which we have seldom seen here. We have had low thermometer continuously since before Christmas, on some days dropping below zero at the signal office. The river is gorged with ice, and while we have not suffered any great disaster (such as was experienced at Cincinnati) by the cutting down of boats, some of our factories are disabled by inability to get a sufficient supply of coal. Those which depend on Pittsburgh coal for their fuel can descry over the river and across the bridge their barges by means of telescopic observation, but they might almost as well be at Pittsburgh as far as ability to get at them is concerned.

The demand for Kentucky coal has been greatly stimulated. Large quantities of that are coming from both Western and Eastern fields daily. It is making plenty of business for the railroads and is a matter of congratulation to our citizens that the ample supplies are so near home. The quality of the coal is also much improved over former years, when the mines were just beginning to be worked.

There has been, as a matter of course, a great demand for all ice and winter goods. Every pair of Skates have been long since sold out; Sleighs, Sleigh Runners, Robes, Bells, &c., have been ordered and re ordered, and everything possible on runners has been set in motion. Old Sleighs which have been slung up to the barn rafters for years, to gather dust and cobwebs and to season under the summer sun, have been taken down and made merry by youthful occupancy and jingling music once again.

There have been quite a number of moderate advances in some Hardware lines and more or less indication of others to follow. The great staples are, however, undisturbed. They seem disinclined to move one way or the other.

The railroads are again burdened with freight, owing to the fact that the rivers are stiff with ice. It will be weeks, apparently, before we can hope to see the streams used as highways of commerce again. Altogether it is what is known as a "good old-fashioned winter." There is no trouble keeping hog meat fresh on the back porch in the country, while those who dwell in cities cherish the hope that it is a genuine germ killer.

Omaha.

LEE-CLARKE-ANDREESEN HARDWARE COMPANY.—The first two weeks of the year can hardly be said to have developed any new features, especially peculiar to itself, in the field of traffic. Trade started in the new year where it left off in the old and has moved steadily along at an encouraging pace, and if it proves to be a stayer, as indicated by the prevailing conditions, there will be no cause for complaint on the part of the jobbers at least. The traveling fraternity have now fairly "hit the road" and as a rule are recipients of liberal orders. While it is useless to prophesy what the conditions of trade will be next summer and autumn, it is reasonably safe to predict that there will be an active business from now on until the new crop appears sufficiently to attract attention.

Philadelphia.

SUPPLEE HARDWARE COMPANY.—The year 1893 is yet too young to expect any important trade revelations. Salesmen who reported home January 1 desired some days to rest and for enjoyment before again starting on the road; then came preparations of new price-lists to replace those old and worn, re-examination of prices, &c.

The cold weather, which is quite unusual in this section, has also detained many in their snug quarters at home and dampened the ardor of their usual eagerness for the early campaign; consequently we have nothing startling at this writing to report.

About all the changes that have been made in catalogue prices upon leading goods have been, as we predicted two weeks ago, advances.

Planes have sustained quite an advance above the profitless price to which they had receded in 1892. Wrought Butts have been taken from the list of unprofitable products and slightly advanced. Strap and T-Hinges, while not at the price of one year ago, have stiffened in price. Trace Chains are likely to remain at considerably above former prices. Green Wire Cloth is held firm at a slightly advanced price. Scythe Snaths will not likely be sold at the low price of one year ago. There are yet a few articles untouched on which we look for a slight advance.

The National Bicycle Show, held in this

city under the auspices of the Associated Cycling Clubs of Philadelphia, from January 4 to 14, was a success so far as the number of standard machines were represented.

The display was a credit to the Association and drew a large number of interested visitors from distant cities, doubtless to take advantage of the rare opportunity of comparison of the various machines on exhibition. The display of many of the representatives was exceedingly fine. Among those we notice Pope Mfg. Company, Lovell Arms Company, Overman Wheel Company, Hickory Cycle Company, McIntosh-Huntington Company, Wilson, Myers & Co., Gormuly & Jeffries, and Wm. Reed & Son. There were in all 157 stands, the greater number making a very creditable display.

We find the feeling for an increased trade in 1893 on Bicycles is general with the leading manufacturers with whom we come in contact.

This naturally speaks well for the prosperity of the country, as these usually are articles of luxury.

We have been asked since our last favor upon what we based our conclusions that the present outlook has every appearance of continued prosperity for the year 1893.

To define our position we would say we are not among those who believe that the present Congress will advocate any rash or hasty legislation, neither do we believe that Mr. Cleveland is a man likely to be influenced in his action by extremists or selfish politicians, or misled by the sophistries of the reckless theorist. His utterances after the nomination and since the election have been of the most conservative nature. Nothing has been written or said by him to indicate a desire or intention to create a revulsion of the economic principles of the Government, or to adopt any measure which would interfere with the present prosperity of the country, and it would be a hazardous undertaking to attempt it.

The country has passed through two years of unprecedented prosperity, not only to the manufacturing industries of the country, but to the employees and wage-workers throughout our land. The interior traders have also, in cases where they have given attention to their legitimate work, shown a profitable business; at least to the extent of making a good living.

The number of failures reported, according to the statistics, in 1892 was 2000 less than in 1891, and the indebtedness of the firms who failed in 1892 was $75,000,000 less than that of those who failed in 1891, and the lowest average number of failures nce 1878.

The South has shown less satisfactory results than other portions of the country. The low price of cotton—in fact, below the average cost of production—has been unfortunate for that section.

Besides some sections have suffered from speculation; and although individually traders have not been sufficiently interested to cause financial distress, it has made many of them short of funds, and not only prevented an enlargement of trade but compelled a curtailment of their stock.

We see no reason why the future of the South may not be an era of prosperity and improvement, and now that the election has gone overwhelmingly in favor of their views, encouragement will take the place of the depressed feeling that has issued from causes above mentioned.

We are surprised to learn of the many who are unfamiliar with the probabilities of Congressional effects upon legislation. As an illustration of the unfamiliarity on the subject we have reports from salesmen that occasional customers hesitate to keep their stock of Pocket Cutlery intact, fearing a decline from tariff legislation, when it is a well-known fact that nothing will or can be affected during the present session of 1893, and from present appearances it is not at all likely that an extra session will be called outside of the Senate for the purpose of confirming the incoming President's cabinet and other appointments; therefore the meeting of the two Houses for regular business is not likely to occur before December, 1893, at which time the regular business will occupy the time until at least February or March, 1894, after which the careful preparation of a new tariff law will require at least two months, and it is not at all likely that a revenue bill could reach the President for his signature before June or July of 1894.

It is safe to say, therefore, that the present tariff on Cutlery has at least 18 months of life from present date, and those persons who would sacrifice their trade for a year and a half are just the persons who have always been unsuccessful in business while their neighbors take advantage of their timidity in business and reap the benefit.

Further, it is a well-known fact that very many styles of German Pocket Cutlery are placed before the consumer at the present time at no higher rate than before the passage of the present bill, and a further number of styles at not over an advance of 5 per cent.

As an illustration, we are to day selling Pocket Knives at $1.25 to $1.50 per dozen; other Knives that come within the limit of the tariff, from $4 to $4.50, and others which we sell at from $8 to $8.50, on which there has been no advance. There are certain Pocket Knives that come between these rates, on which there is variously 5 per cent., 7½ per cent. or 10 per cent. advance per dozen, making from 3 to 6 cents a Pocket Knife advance. This is owing to the reduction of wages in Germany. As a further illustration, we would state that we ourselves have imported a two blade Pocket Knife which prior to the present tariff cost in Germany 85 cents, at a reduction of 20 cents, making the former cost in Germany 25 per cent. advance over present cost; also a Knife, which formerly cost in Germany $1.85, to which add 50 per cent., making $2.75 net in this country; since the existence of the present tariff these have been bought in Germany at $1.50, to which add the present tariff of 50 per cent., making 75 cents and 50 cents for the export price per dozen for two-blades, the three amounting to $2.75, being the same cost exactly in this country as the old price in Germany made them cost in this country.

The advance on higher grades of American Pocket Cutlery anticipated by the American manufacturers in most cases has not taken place, owing to foreign competition.

Some of the American manufacturers who have made cheaper quality of Cutlery to compete with the Germans have, on some styles of goods, advanced materially, but the better class of manufacturers (one of whom is represented by ourselves) show only an average advance of 5 to 7½ per cent.

In this connection we feel safe in makin the prediction that when the change in the tariff is effected by legislation the English and Germans will advance their price in England and Germany to the price that existed before the present tariff went into effect. They will be quite unwilling to work at the starvation wages at which they have recently been compelled to eke out a miserable existence.

Therefore it can be seen that no sensible dealer will indulge in the erroneous views of reducing his stock of Pocket Cutlery at the expense of his business.

The orders placed by ourselves for foreign Cutlery are equally as large as any orders ever placed by us in previous years, and were placed in view of the facts of the case as given above.

Cleveland.

The W. Bingham Company.—This is the first season in a great while that we have had an old-fashioned winter, and its effect has been felt upon trade, inasmuch as it has increased the demand for all season goods. Sleigh Bell and Skate stocks are depleted and the orders generally are better and larger than last year at this time. Prices unfortunately are still weak, notably so on Wire and Wire Nails. Values of all lines, with a few exceptions, are extremely low, and it would seem that any change would be of an upward tendency. All merchants who take their stock at present prices should realize a handsome profit on the same during 1893.

St. Paul.

Farwell, Ozmun, Kirk & Co.—Jobbers are generally busy just now closing their annual inventories and preparing for the new year's business, so that there is but little to write of as to trade; 1892 was, on the whole, a favorable year. Jobbers would be satisfied to be assured that '93 will show as good results, but they expect at least no larger volume of trade in the first quarter than was had in the same period of last year, and the condition of trade from April 1 will depend largely on the crop prospects, and this will gradually take shape as harvest approaches till we can see definitely what shape our great farming interests are going to be in for another year.

Jobbers will be conservative this year in their estimates and dealings, and 1893

will probably be known in the future years by this feature rather than as a year of greatly increased trade.

Portland, Ore.

CORBETT, FAILING & ROBERTSON (INCORPORATED).—Business has been practically at a standstill throughout this section for the past three or four weeks. The annual stock taking was generally completed by January 1 and change sheets made up. The travelers are now on the road and the result of their work begins to be felt. The feeling in the trade is that the prospect for "'93" is not equal to that looked forward to a year ago. This section feels the change in not having the tide of immigration moving this way that we had two and three years ago. Then, the low price for wheat, our chief article of export, is also a drawback.

The change we have to report is that in firms rather than prices. On January 1 the business of Corbett, Failing & Co. and Foster & Robertson was consolidated under the name of Corbett, Failing & Robertson (Incorporated). John R. Foster, whose name has been longer identified with the exclusive dealing in Hardware than any other in the city, now retires from active business. Corbett, Failing & Co. as a firm date back 27 years, so that the change brings two of the oldest houses on the coast together.

There has been a decline of 1 cent per pound in Manila Rope and half a cent for Sisal since our last. Later there will likely be further changes in prices to report.

Baltimore.

CARLIN & FULTON.—For years we have listened to the traditions of the venerable members of society as to the "old-fashioned winters," and with reverence have accepted their philosophical conclusions as to the undoubted change of climate which has occurred since their youth, but as history repeats itself so does the weather, and after an absence of some years the "old-fashioned winter" is with us again, and our theories of climatic change are all upset.

These letters, of course, are not intended for mere weather bulletins, and the temperature from time to time is only mentioned as showing its effects upon business, which is greatly influenced by the extremes of both heat and cold and by flood and drought.

The intense cold has interfered greatly with trade in our tidewater sections, for while our harbor itself is not closed yet the tributaries and smaller streams are all frozen over and navigation impossible. The oyster interests are thereby greatly depressed, and the small stores in the adjacent vicinity can neither sell nor buy.

In the interior and throughout our mountain sections the deep snows have made the roads almost impassable and the farmer can neither ship his produce nor haul his supplies, and the retail merchants in the villages suffer not only in their sales but in their collections; but in spite of all these drawbacks seasonable cold weather is of undoubted benefit to trade, for the stocks of goods bought in anticipation of the winter's needs are not left upon the shelves as idle capital, but are turned into money and circulate freely, to the advantage of all.

While a low temperature has extended even to the far South, it has not interfered very much with business in the cotton States, and our salesmen report that every one is at work and the farmer busy preparing for the crop to be gathered this coming fall; and stimulated by the present price of cotton, as contrasted with the figures of the last two years, the planter is full of hope for the future. Rigid economy and the decreased indebtedness resulting therefrom, with an increased area for food products, will make the growing cotton crop of this year profitable, no matter how large it may be, and the situation is undoubtedly far different from the prospects of just one year ago.

It seems odd that with the ground covered with snow buyers should be placing their orders for Ice Cream Freezers and Refrigerators and Fly Traps and other goods suggestive of midsummer, but with the experience of this winter with Skates, the wise man is he who makes his contracts and gets his goods and has them when the inevitable demand comes, and does not wait until the last moment and find to his utter surprise that stocks have become depleted, and after having taken no chances as to the demand, he must take his chances as to the supply.

We do not advocate speculation by our customers, but we do suggest the advisability of their looking ahead to a trade which is almost certain, and to enter their wants, in order that shipments may be made of seasonable goods at the time when they are most wanted.

New Orleans.

A. BALDWIN & CO.—The spring trade is fully on with us and we are certainly gratified at the decided improvement and the magnitude of the business in this section of the country. Orders are coming in very freely and it is evident that the country merchants have begun to realize that it is about time to piece up their stocks. The low price of some of the leading staple articles is an inducement with most of the merchants to place larger orders before an advance takes place.

Notes on Prices.

Cut Nails.—The Cut-Nail market has developed no specially new features since our last report, the demand continuing fair but not heavy. Prices are quite regularly maintained, and are represented in the East by the quotation of $1.40 for carload lots at mill on a 35 cent average. In the West they are slightly higher—namely, $1.42½ to $1.45 for carload lots at mill on the same average. There is a good deal of inquiry on the part of prospective buyers, and indications point to an excellent demand in the near future. Small lots from store in New York are held at $1.75 to $1,80, and carload lots on dock at $1.60 to $1.75, according to average.

Chicago, by Telegraph.—The Lakeside factory is again in operation after a short stoppage for repairs. A fair inquiry is reported, but only moderate buying. Prices are still quoted at about $1.60 on 30-cent average for factory shipments, Chicago delivery. Small lots from stock sell at $1.65 to $1.70, according to average.

Wire Nails.—A good many Wire Nails have been sold during the past week, many of the larger buyers taking advantage of the low prices now prevailing. The quotation for large lots at mill is $1.35 to $1.40, the former figure being given only on exceptionally large and attractive orders. For less than carload lots at mill 10 cents additional is charged. The fact that it is understood that the manufacturers have been conferring with a view to taking action to secure higher prices has not thus far had much effect on the market, but it is obviously the part of wisdom for buyers to watch the market closely.

Chicago, by Telegraph.—An important meeting has been in progress in this city since last Wednesday, under the auspices of the Columbia Wire Company. It is stated that all the manufacturers of Plain Wire, Barb Wire, and Wire Nails have been in attendance, and that arrangements are being made which will terminate the severe competition which has so long raged in these trades. The arrangement has not yet been perfected in all its details, but much confidence is displayed by those enterested that it will be pushed to successful conclusion and they assert that prices are now at bottom and will be advanced considerably before the close of the month. A money forfeit will probably be the basis on which the agreement to maintain prices will operate. Transactions in Wire Nails the past week have been only such as were forced by manufacturers. Sales were made in moderate lots from factory at $1.55 to $1.60, Chicago, but lower prices were made on special lots carrying high averages. Jobbers are selling from $1.60 to $1.70 according to quantity.

Barb Wire.—The principal feature of interest in connection with the market for Wire or Wire products is the fact that the producers of raw material, as well as of the finished goods, are conferring with reference to action to improve the condition of things in these lines. Nothing has as yet been accomplished, but some far-reaching measures are in contemplation, and it remains to be seen whether or not they can be carried into effect. At the present time the Barb Wire market is in a somewhat unsatisfactory condition. Prices are rather weak, and yet manufacturers, while evidently desirous of securing orders, are indisposed to make more than slight concessions Quotations depend somewhat upon location, and are represented by $2.40 for carload lots of Four-Point Galvanized at mill, a slightly lower figure being made in some cases, while other mills, from their location, are justified in quoting from $2.40 to $2.50. Small lots from store in New York are still

quoted at $3.10 for Four-Point Galvanized, carload lots being held at $3.

Chicago, by Telegraph.—This branch of trade is expected to be speedily affected by the movement among Wire manufacturers reported under the head of Wire Nails. Thus far prices are unchanged and range from $2.15 to $2.25 on carload lots of Painted and $2.55 to $2.70 on Galvanized. Jobbers are not maintaining the full difference between their quotations and those of manufacturers, but sell small lots at $2.25, Painted, and $2.70, Galvanized, with 5 cents off for mixed carloads.

Peck, Stow & Wilcox Co.—Under date January 2 a revised discount sheet has been issued by Peck, Stow & Wilcox Company, New York and Southington, Conn., applying to their 1890 catalogue. We print this discount sheet below, from which it will be observed that a good many new goods are represented in it and some changes in price, which are deserving the attention of the trade. Special goods marked A are net, subject to a cash discount of 2 per cent. beyond the price printed. Other goods than those marked A are subject to a discount of 25 per cent. beyond the figures given below. Terms, 30 days, 2 per cent. discount for cash.

Tinners' Tools and Machines.

	Discount per cent.
Stow's Patent Folders	A Net.
Grooving Machines	A Net.
Stow's Patent Incased Machines	A Net.
Columbian Machines, No. 152 Folder, Grannis' Groovers	A Net.
Add Nos. 21 and 22 Groovers, with Kennedy Attachment, 20 and 30 inches. List, $21 and $27	Net.
Change list on Kennedy's Grooving Attachment to $7.	
Wire Straightener, Feed and Cutter	A 10
Add No. 7 12-Roll Wire Straightener. List, $45	A 10
Add No. 27 Combined 12-Roll Wire Straightener, Feed and Cutter. List, $80	A 10
Stow's Improved Standards	A Net.
Raymond's Patent Machines	A Net.
Read Raymond's Large and Small Burrs, without Standards. List, $8.25 and $7.75.	
Raymond's Machine Standards	A Net.
No. 1 Machines	A Net.
No. 1 Machine Standards	A Net.
Jones' Rim Machine	A Net.
Tucking Machine	A 10
Stove Pipe Crimper and Beader	A 16⅔
Crimping Machines	A 5
Notching Machine	A 5
Beading Machines	A 5
Moore's Double Seamers	A Net.
Stow's Double Seamers	A 5
Olmstead's Double Seamers	A 25
Hufbert's Double Seamers	A 25
Burton's Double Seamers	A 5
Stove Pipe Formers, Nos. 1, 2, 100, 200, 01	A 20
Tin Pipe Formers, Nos. 1, 2, 101, 102	A 20
Stove Pipe Formers, Nos. 0½, 0, 0100	A 5
Tin Pipe Formers, No. 5	A 5
Forming Machines	A 5
Can Top Folder	A 5
Boiler Expander	A 5
Tube Formers	A 5
Sheet Iron Folding Machines	A 5
Patent and Improved Gutter Machines	A 5
Gutter Beaders and Rods	A 20
Squaring Shears	A 15
Squaring Shears, new styles and new numbers, see "Tinners' Book," 1893.	
Slitting Shears	A 15
Lever Shears	A 10
Lowe's Parallel and Beveling Shears	A Net.
Combined Bench and Slitting Shears	A 20
Circular Shears	A 5
Waugh's Circular Shears	A 10
Shear and Punch	A 10
Samson Punch	A 10
Tailors' Pattern Snips	A 30
Bench Shears and Snips	A 20
Roofing Shears, change list: Nos. 80 90 100 20; Each, $2.00 1.50 1.40	
Shear Holder and Bench Plates	A 20
Hammers	A 30
Stow's Stake Holder	A 20

Tinners' Hardware.

Set of Tools and Tinners' Stakes	A 20
Swedges	A 20
Square Pan Machines	A 5
Solid Punches	A 60
Hollow Punches	A 20
Tinners' Rivet Sets and Chisels	A 60
Cast-Steel Rivet Sets	A 70
Hand Groovers	A 20
Tinners' Awls and Cutting Nipper	A 25
Roofing Tongs	A 20
Reese's Patent Roofing Tongs	A Net.
Roofing Tools	A 20
Kenney's Double Seamer	A Net.
Burritt's Double Seamer	A "
Burritt's Cross-Lock Seamer	A "
Change list on Cross-Lock Seamers as follows: 20 inch, $44.00 " 28 " 52.00	"
Cornice Brake	A "
Metal Belting Machine	A 10
Bell's Edger	A Net.
Machine Parts	A "
Wire Gauges	10
Tinners' Bevel and Rule	25
Candlesticks	25
Flue Stops	40
Parallel Vise	Net.
Tinners' Fire Pots	25
Soldering Coppers, subject to change	25
Soldering Pan and Gas Furnace	25
Handles, Mallets, Melting Ladles	25
Malleable Kettle Ears	16⅔
Kettle and Tea-Kettle Ears	40&10
Malleable Ears and Clips	25
Malleable Handle and Clip	3⅓&5
Globe Coffee Roasters	Net.
Boiler Handles	40
Malleable Clips	33⅓
Tea Pot Handles	40
Paste Jaggers	25
Sad and Coffee Pot Stands	25
Coal Tongs	25&5
Stove Cover-Lifters	16⅔
Stove Pokers	50
Coal Shovels	30
Shovels, Tongs and Pokers	50&5
Shovel and Tong Stands	50
Fire and Kitchen Sets	55&5
Blower Stands	55
Fire Dogs	50
Brass Andirons	50
Umbrella Stands	33⅓
Match Safes	33⅓

General Hardware.

Coffee and Spice Mills	A 60&5
Steel and Iron Squares	75
Crenelated Steel Squares	75
Shingling Bracket and Clapboard Gauge	10
Robinson's Wrenches	40&5
Add Robinson's Wrenches Blued, same list as Bright	33⅓&5
Machinists' Wrenches	60&5
Agricultural and Hayden's Wrenches	65&10
Cast-Steel Nail Hammers	10&5
Farriers' Hammers	10
Riveting and Machinists' Hammers.	10
Cast Nail Hammers	16⅔
Blacksmith's Steel Hammers.	10
Hatchets and Axes	16⅔
Cast-Steel Hatchets	33⅓
Bush Hooks	20
Butchers' Cleavers	25
Corn Hooks	16⅔
Cast-Steel Calipers	50
Add Calipers, No. 203, same as 103: Inches, 3 4 5 6; Per dozen, $3.50 $4 25 $5 $6	60
Add Nos. 205 and 210, same as Nos. 105 and 110. List on both the same Inches, 3 4 5 6 8 10; Per doz. $2.65 2.85 3.30 3.75 5.35 6.50	60
Cast-Steel Pliers	33⅓
Carpenters' Pincers	50
Add Side Cutting Plyers, Nickel Plated: Inches, 5 6 7 8; Per doz. $14.50 15.50 19.50 22.50	33⅓
Add Safety Side Cutting Plyers, Insulated Handles: Inches, 6 8; Per dozen, $25.00 40.00	16⅔
See printed list. (page 208A)	50&10
Add Cast-Steel Gas Burner Plyers Inches, 5 6 7 8; Per doz. $6.00 7.00 8.00 9.25	50&10
Inches, 9 10 12; Per doz. $10.25 12.50 14.50	50&10
Carpenters' Pincers, add: Inches, 7 9; Per dozen, $6.10 7.60	50
Cast Steel Dividers	60
Compasses and Saddlers' Punches	50& 5
Add No. 14 Saddlers Punch—⅛-inch hole. List, per dozen, $5.25.	
Chisels and Slicks	66⅔&10
Add extra for Beveled-Edged Chisels, per dozen, $1	Net.
Chisels and Gouges	20
Tanged Firmer Chisels and Gouges	20
Socket Firmer Gouges	25
Socket Paring Gouges	16⅔
Socket Firmer Chisels, in fancy box.	10
Drawing Knives	66⅔&10
Auger and Car Bits	60&5
Assorted Bits, in fancy boxes	50
Taylor's Auger and Car Bits	50
Bit Braces	40&10
Add No. 92, Peck's Patent Bit Brace, 10 inch, without Ratchet, dozen, $33	
Add No. 100 Ratchet Brace, 14 inch, $53	40&10
Add No. 104 Ratchet Brace, 6 inch, $37	40&10
Handles	70&10
Breast and Ratchet Drills	33⅓
Add No. 12 Hand Drill, each, $2.50.	33⅓
Cold Chisels	66⅔
Screw Drivers	60
Ratchet Braces and Bits, in fancy box	30
Box and Plumbers' Scrapers	33⅓
Box Chisels	33⅓&5
Box or Cotton Hooks	40
Cheese and Butter Triers	16⅔
Saw Rods	30&10
Saw Sets	20
Scratch Awls, Ice Picks and Axes	25
Change list of No. 1 Ice Pick to $1.90	25
Carpet Stretchers and Tack Claws	25
Add No. 2 Tack Claw. List, $0 50.	25
Add No. 3 Tack Claw. List, $0.75.	25
Carpet Hammers	25
Household Favorite	16⅔
Add No. 12 Tack Hammers, per gross, $9	25
Steak and Shoe Hammers	25
Nut Cracks	25
Change list on No. 4 Nut Crackers to $3.75	25
Pruning Shears	25
Garden Forks and Trowels	33⅓
Shoeing Pincers and Hoof Nippers.	25
Blacksmiths' Butterises and Drills	25
Carpenters' Door Clamps	25
Cabinet and Carriage Clamps	25
Steel Traps	60&10
Bench and Jack Screws	33⅓
Vises	16⅔
Tea Scales	16⅔
Spring Balances	Net.
Add No. 00 Round Balance, per dozen, $3 50	Net.
Scale Beams	33⅓
Steelyards	16⅔&5
Little Giant Meat Cutters	33⅓
New Triumph Meat Cutter, No. 505, per dozen, $21	Net.
Woodruff's Meat Cutter	10&5
Hale's Meat Cutter	50
Dixon's Meat Cutter	10&5
Sausage Fillers	33⅓
Tobacco Cutters	20
Ox Bow Pins	33⅓
Cattle Leaders and Bull Rings	30&10
Hitching Rings	40
Hog Scrapers	33⅓
Ox Balls	33⅓&5
Change list of No. 13 Ox Ball to $8.75	
Electric Bells	33⅓
Centric Bells	33⅓
Bells and Bell Levers	25
Add No. 0611 Bronze Metal Plain Levers, per dozen, $6.25	25
Add No 0617 Bronze Metal Nickel Plated, per dozen, $8	25
Trip Gong and Alarm Bells	16⅔
House Bells on Carriages	16⅔
Slide Bell Pulls and Bell Cranks	16⅔
Bell Cranks, Spikes and Springs	16⅔
Call and Hotel Bells	50
Casters	40&10&5
Cast Tower and Barrel Bolts	40&5
Wrought-Iron Barrel Bolts	60&10&10
Cast Barrel Bolts	40
Cast-Brass Barrel Bolts	33⅓
Wrought-Iron Bolts	60&5
Wrought Spring Bolts, Nos. 415 and 417	60&10&10
Steel Spring Square Bolts	40
Cast Brass Square Spring Bolts	33⅓
Square-Necked Bolts	40
Wrought Square-Necked Bolts, No. 425	60&10&10
Mortise and Lever Bolts	30&10
Flat Shutter Bolts	40
Flush Bolts	33⅓&5
Flush Bolts (page 308)	40&10
Cast-Brass Flush Bolts	33⅓
Chain Door Fasteners	33⅓
Chain Bolts	33⅓
Bottom Bolts	33⅓
Spring Foot Bolts	40
Spring Foot Bolts (page 319)	33⅓
Flat Cupboard Bolts	40
Cupboard and Ship Bolts	40
Brass Showcase Catches	33⅓

Read full size cut, No. 5, Showcase Catch, instead of No. 6.
Brass Cupboard Catches..... 25
Cupboard Catches..... 33⅓
French Window Catches..... 33⅓&5
Cupboard Turns..... 40&10
Screen-Door Catches..... 40&10
Transom Catches..... 33⅓
Door Buttons, on Plates..... 25
Door Buttons, Cast Brass, No. 25... 25
Door Buttons, Nos. 30 and 35..... 33⅓
Sash Fasteners..... 33⅓
Shutter Bars..... 33⅓
Shutter Bars, Nos. 111, 115, 118..... 50
Add Shutter Bars..... 33⅓
No. 35. 2 in., A. Bronzed, $.87
No. 45. 2½ in., A. Bronzed, .92
No. 305. 2 in., A. Bronzed, .66
No. 305. 2½ in., A. Bronzed, .72
Sash Lifts..... 33⅓
Sash Pulls and Plates..... 33⅓
Shutter Lifts and Knobs..... 33⅓
Stubs and Plates and Shutter Screws. 33⅓
Sash-Cord Irons..... 40
Sash Centers..... 33⅓
Window Spring Bolts and Sockets. 16⅔
Sash Props..... 40
Trunk and Sash Rollers..... 25
Hay Fork Pulleys..... 25
Frame Pulleys..... 25
Dumb Waiter Pulleys..... 25
Screw and Side Pulleys..... 25
Clothes Line Pulleys..... 25
Change list of No. 85 Clothes Line Pulley to $1.30 per dozen.
Tackle or Awning Pulleys..... 30
Hot-House Pulleys..... 30
Sliding and Shutter Sheaves..... 25
Incased Swivel Pulleys..... 25
Upright Pulleys..... 25
Well Wheels..... 30
Drawer Pulls..... 25
Change list, No. 5 Drawer Pulls to $2; No. 105 to $3.10..... 25
Druggist's Drawer Pulls..... 40
Card Frames..... 33⅓
Book and Card Racks..... 40
Flush Rings and Lifting Handles... 40
Cast-Brass Lifting Handles..... 40
Japanned Lifting Handles..... 40
Wrought Chest Handles..... 50&5
Chest Handles..... 50
French Shutter Handles..... 40
Trap-Door Rings..... 50&5
Letter-Box Plates..... 40
Add No. 200 Letter-Box Plate, with Inside Plate, same pattern as No. 20, per dozen, $3.75.
No. 250, same pattern as No. 25, with Inside Plate, per dozen, $4 25.
Add Inside Plates for Nos. 51, 55, 58, per dozen, $1..... 40
Thread Escutcheons..... 25
Door Knobs..... 50
Store-Door Handles..... 16⅔&5
Cottage Latches..... 16⅔&5
Roggin's and Thumb Latches..... 16⅔
Barn-Door Bolt and Catch..... 16⅔&5
Barn-Door Latches and Pulls..... 25
Door Pulls (page 407)..... 50&10&5
Change list on No. 288 Door Pull to $3..... 50
Door Pulls (page 408)..... 50
Door Pulls (page 409)..... 25
Hat and Coat and Wardrobe Hooks 25
School-House Hooks..... 25
Clothes-Line Hooks..... 25
Harness Hooks..... 25
Chandelier Hooks..... 25
Ceiling Hooks..... 25
Lamp and Cabin-Door Hooks..... 33⅓
Screw and Drive Hooks..... 25
Cup and Molding Hooks..... 40
Hammock Hooks..... 30
Bird-Cage Hooks..... 25
Boot Jacks..... 25
Change list of Boot Jacks:
No. 5 to $2.75.
No. 105 to 3.25.
Foot Scrapers..... 25&5
Kitchen Grindstones..... 16⅔
Grindstone Fixtures..... 20
Strap and T-Hinges, revised list..A 50&10
Plate and Screw-Hook Hinges..... 35
Inside Shutter Hinges and Parliament Butts..... 25
Ratchet Spring Hinges..... 16⅔
Loose Pin Butts..... 60&10
Loose Pin Butts (page 464)..... 80&10
Gate Latches and Hinges..... 33⅓
Barn-Door Hangers..... 40
Barn-Door Stays and Rollers..... 40
Sliding-Door Sheaves..... 50
Barn and Sliding-Door Rail..... 33⅓
Towel Rollers..... 16⅔
Plumb Bobs..... 16⅔
Shelf Brackets..... 40
Flower Pot and Lamp Brackets..... 33⅓
Twine Boxes..... 33⅓
Paper Files and Clips..... 33⅓
Common Carriage Bolts.....A 75&10&5
Philadelphia Pattern Carriage Bolts A..... 80
Philadelphia Eagle Bolts.....A 80&15
Carriage Knobs..... 40
Change list of Carriage Knobs: No. 375 to $3; No. 475 to $3.
Curry Combs, revised list.....A Net.
Whip Sockets and Cockeyes..... 35

Axes.—Standard Axe and Tool Works, Ridgeway, Pa., issue a price-list showing the line of axes they are putting on the market. It represents a number of axes and also carpenters' adze, bark spuds, mining picks and machine knives. Their prices of axes are represented by the following quotations:

Axes, Standard brand, per dozen.....	$7 00
Axes, Black Eagle brand, per dozen....	8 50
Double Bit Axes, Standard brand, per dozen.....	8 50
Double Bit Axes, Black Eagle brand, per dozen.....	13 00

Spooled Wire.—The following are revised quotations made by Malin & Company, Cleveland, Ohio, on their Spooled Wire:

	Discount. per cent.
Annealed and Tinned Wires.....	65
Brass and Copper Wires.....	55

Tire Bolts.—The market for common Tire Bolts is not in quite as satisfactory a condition as usual, owing in part to the fact that some parties making other Bolts have entered the field, the result being an increase in competition on this line. Some lower prices have thus, in some cases, been developed.

Carriage Bolts.—There is a good deal of irregularity in the market on Carriage Bolts, the competition being active among manufacturers, many of whom quote freely without regard to the nominal prices adopted by the association.

Machine Bolts.—This line is also very much demoralized, and prices are considerably lower than those which have recently been ruling.

Wrought Iron Goods.—There has been within a short time a still further decline in the prices of Wrought Iron goods. The market is yet without strength and somewhat irregular.

Bright Wire Goods.—There seems to be more or less unevenness in the market, and quotations are made in exceptional cases, which indicate a reduction in the price of the goods.

Glass.—The severe cold weather has had a depressing effect upon building interests, consequently the demand for Glass both from factory and from jobbers is reduced. The price which buyers have paid for Glass in car lots since the factories started up is stated as being 85 per cent. discount for Single, and 85 and 5 per cent. discount for Double. Recently they have been able to purchase at these prices shaded from 2½ to 5 per cent. Those now in the market with orders are trying to contract Glass for 85 and 5 per cent. discount, all around, including Single and Double Strength. The future prices of Glass depend largely upon whether the National Glass Company prove to be a success or not. The company, we are advised, now have a charter and are awaiting the action of some of the directors of the individual companies through the States before completing permanent arrangements. This company are, we understand, a proposed combination of the manufacturers and jobbers, and their object is to make carload buyers pay a fixed price for Glass. The arrangements of the American Plate Glass manufacturers have been completed, and D. E. Wheeler has been appointed general agent for all the manufacturers, with headquarters Room 614, Times Building, Pittsburgh, Pa. This arrangement was to take effect January 14. There is no change in the condition of trade or in the price of imported Window Glass, the demand being all that could be expected at this season of the year. Quoted prices on Glass are as follows: American Window Glass, 1000-box lots or more, 80 and 15 per cent. discount; carloads, 80 and 10 per cent. discount; less than carloads, 80 and 5 per cent. discount. French Window Glass, 75 and 10 and 5 per cent. discount. American Plate ranges in price from 50 and 10 and 7½ per cent. discount to 60 and 2½ per cent. discount. Imported Plate Glass, 60 per cent. discount to 60 and 10 and 5 per cent. discount.

THE
Hardware Club
OF NEW YORK.

Arrangements are being actively made for the dinner of the Hardware and Metal trades, to be held on Tuesday evening, February 21, as announced in the following official circular, which has been sent out to the members of the club:

FIFTH DINNER
OF THE
HARDWARE AND METAL TRADES.

RECEPTION, 6 TO 7 O'CLOCK; DINNER, 7 O'CLOCK.

The fifth dinner of the Hardware and Metal Trades will be held under the auspices of the Hardware Club of New York, in the Banquet Hall of the Manhattan Athletic Club, Madison avenue and Forty-fifth street, on Tuesday evening, February 21.

Tickets, $5 each (wines a la carte), can be had from A. D. Clinch of Underhill, Clinch & Co., 94 Chambers street.

We are under obligations to the officers of the Manhattan Club for the courtesy of extending to our guests the privilege of inspecting their magnificent building in all its departments during the evening.

The demand for tickets for the dinner of 1892 exceeded the supply, and it is hoped that applications for tickets this year will be sent in early, as the issue will be limited, so as not to exceed the comfortable seating capacity of the hall.

The opportunity of securing tickets is first offered to the members of the Hardware Club, and we shall esteem it a favor if you will kindly advise us by January 25 the number of tickets you desire.

Dinner Committee:

ALFRED D. CLINCH, *Chairman*,
PETER MCCARTEE.
JOHN L. VARICK.
EDWARD C. VAN GLAHN.
EUGENE BISSELL.

It is expected that there will be at the dinner a large representation of the trade from within as well as outside the city who have not as yet formally consummated their membership in the club, but, as announced above, tickets are first offered to the members. It will be well for any who are desirous of being present at the dinner, whether at present members of the club or not, to send in their applications early. The following additional persons have recently joined the club:

DAVID HOMER BATES,
The Bradstreet Company,
New York.

JARED CHITTENDEN,
The Bradstreet Company,
New York.

CHARLES F. CLARK,
President The Bradstreet Company,
New York.

BRENT GOOD,
57 Murray street, New York.

O. D. GRAY,
The Gast Lithograph and Engraving Co.,
New York.

CHAS. S. HOUGHTALING,
3 Park place, New York.

JOHN OLIVER,
The Bradstreet Company,
New York.

RALPH H. PLUMB,
Plumb, Burdict & Barnard,
Buffalo, N. Y.

THOMAS H. SPAULDING,
Jersey City, N. J.

WILLIAM K. STANSBBURY,
Eagle File Company,
Middletown, N. Y.

Toledo Bolt & Nut Company.

TOLEDO BOLT & NUT COMPANY, Toledo, Ohio, have begun loading up their machinery preparatory to their removal to Muncie, Ind., and expect to have everything cleared up in about three weeks. They are hoping to have their new factory at Muncie running about March 1. Their new plant is located on their rolling-mill property, and they advise us that they will have better facilities than those enjoyed in Toledo. Their facilities in Toledo have been behind their requirements, and the location of the property was such that they could not make any extensions. The plant at Muncie comprises three buildings, 50 x 260 feet each, exclusive of the machine shops. The forge room is of steel frame work with corrugated iron covering and is so arranged that the sides can be raised to a hight of 8 feet, allowing a free circulation of air. The finishing and packing rooms are of brick. The office is 50 feet square and is located in front of the packing room. All of the buildings have closed walls and will be lighted from the roof. The Toledo Bolt & Nut Company and the Indiana Iron Company are controlled by the same parties, and hereafter will be known as the Indiana Iron Company, the Toledo Bolt & Nut Company becoming the Bolt department of the works. In view of reports which have been circulated that the gas supply at Muncie is giving out, they advise us that they have received a telegram from their engineer which states that their last well runs 10,014,000 feet per 24 hours.

C. C. CLAPPER & Co., Zanesville, Ohio, have added a line of Farm Hardware and Implements to their Buggy and Harness business.

Export Notes.

THE ARGENTINE REPUBLIC has now 7310 miles of railroad, not including 1520 miles in process of construction. The average cost of all completed lines is about $50,000 per mile.

A recent number of a London trade paper gives the following note from its Sheffield correspondent, himself a merchant:

A Sheffield commission agent called upon me this week with specimens of American-made Files, of which he had been asked to undertake the sale in this country. The United States people offer their Files on terms which cut out local makes—viz., 70 per cent. discount and 5 off; in other words, for a nominal value of £100 they will take £28. 10/. The Files have been shown to File makers, and have been declared satisfactory in regard to quality. The American firm, whose place of business is in New Jersey, state that they are sweeping the Canadian and Australian markets by running out the best brands of English Files, and are now opening up a connection in England itself, sending over 200 to 300 dozens of Files per month.

It should be added the files are machine made in every instance. An American Steel house have stored in London several hundred tons of the best Crucible Steel and have already engaged a Sheffield gentleman to represent them in this country.

John B. Woodward, 130 Water street, New York, export merchant, reports a satisfactory volume of business with Buenos Ayres and River Plate ports for 1892, and anticipates a better trade for the current year. Orders now in hand, and he feels sure other New York houses dealing in that territory are similarly placed, indicate this.

A dispatch from Tampico states that the Mexican Government has decided to remove the tax on coal and lumber, which was $1 per ton and $3 per 1000 feet respectively, and also the $3 per foot draft on ships carrying Mexican exports.

The National Bank of Mexico, Mexico City, recently raised its discount rate to 9 per cent. for loans on fixed time, and 10 per cent. on current accounts. The London Bank there maintains the same rates. There is an active demand for money.

The last mail from Australia brought advices that the wool clip was very large and successful, and the grain harvests unprecedented. New South Wales will, it is thought, have sufficient wheat for at least her own needs; this colony has previously been a large importer of cereals from the other Australian centers.

A Sydney merchant writes that he is in the unusual position of being able to select what customers he will satisfy with their needs for Agricultural Implements rather than straining for business.

Outside of the cities, Australia is without question flourishing, but unfortunately the cities are consumers to much more than 50 per cent of the imports, and they therefore do not show much life.

Thomas Pugh, assistant manager of the New South Wales exhibit at the World's Fair, arrived from Australia by the last steamer. He brought with him 250 tons of exhibit, chiefly of mining industries, while 700 tons are to follow by the next steamer—their exhibit comprising about 1000 tons in all. This colony is the only one which has had the courage to make an exhibit, which is rather unfortunate, since all Australia would have made a creditable showing that would attract attention.

The Government of Guatemala gives notice, through the Director-General of Customs, that following January 1, 1893, all merchandise imported through the port of Livingston will be subject to customs regulations, duties, &c., in accordance with law, the term of ten years granted to Livingston as a free port having expired on December 31, 1892.

Flint & Co., 64–68 Broad street, New York, exporters of American products, manufactured and other, have established a depot known as the American Industrial Exhibits, at 105 and 107 Queen Victoria street, London, E. C., as referred to in our issue of July 14, 1892. It is in charge of S. Levy-Lawson, but is financially backed by Flint & Co., who purchase, ship and pay for all goods. This is an advantage to domestic manufacturers, for the reason that even where goods are adapted and suited to the numerous markets, many have not the facilities, neither are they equipped for keeping in touch with foreign credits. This is a permanent exposition for the purpose of educating buyers who journey to London from any part of the world, and that city was selected on account of accessibility, owing to the innumerable steamship lines connecting Great Britain with all quarters of the globe. This location is within five minutes' walk of the Bank of England and the building occupied has six stories, with a frontage of 60 feet and a depth of 50 feet. Samples are suitably displayed, including Machinery, Hardware, House-Furnishing Goods, Culinary Utensils, Lamps, Clocks, Wringers, Woodenware, Agricultural Implements, Carriages, Garden Tools, Furniture for office or residence, &c. With the exception of the two upper floors reserved for office and other uses, the whole space is devoted to the proper showing of such articles as orders are sought for. The building is lighted by electricity. Mr. Lawson has lately associated with him J. C. Plimpton, having taken over the house of J. C. Plimpton & Co., 65 and 67 Victoria street, Liverpool, who have been introducing American Hardware and specialties in Great Britain, &c., for about eight years. The Liverpool quarters will be retained. In addition to the London and Liverpool houses they have a sample room at 19 Rue de Paradis, Paris, France. Staple goods are carried in stock in separate warehouses for the purpose of facilitating quick de-

liveries. This enterprise maintain a corps of salesmen representing the goods dealt in among the buyers of Europe, and the details of the business are said to be in the hands of practical men who have made the marketing of American wares a close study for years, having acquired their knowledge from personal contact with merchants in various foreign conntries. In addition to meeting local and European buyers, it is hoped many from South America, as well as from the South African and Australian colonies, will find their way there. Mr. Lawson arrived in New York on the 31st ult. on the steamer "Britannic," and will remain here a month or two.

The definitive arrangement of commercial reciprocity with Salvador, concluded November 29, 1892, has been proclaimed by President Harrison, the arrangement being effective from and after January 1, 1893.

The Postmaster-General at Washington recently issued a circular extending the Department order of August last and directing that the United States International postal cards with paid reply be admitted to the mails for any colony or interior State of South Africa at the rate of postage applicable to postal cards addressed for delivery within the Universal Postal Union. This order also applies to United States postal cards, both single and with paid reply, addressed for delivery in other countries and colonies not embraced in the Postal Union, which consent to admit to their mails postal cards addressed for delivery in this country.

The New York & European Investment and Trust Company have filed articles of incorporation in the County Clerk's office in Newark, N. J. Warner Miller of Herkimer, N. Y.; William Brown, William I. Masken and C. M. Wriker of New York; George P. Sheldon of Greenwich, Conn., and John W. Taylor of Newark, N. J., are named as directors. The company aim at the control of the commerce and customs revenues of San Domingo. The debt of that country is now in the hands of a Hollander, who holds a lien on the customs and duties for its payment in yearly installments. The company propose to buy the bonds.

The Treasury Department at Washington has recently issued a circular to every Customs Collector in the United States providing for the filing of accounts of all goods to be exported by rail from this country. Each Collector is directed to keep sworn manifests of all goods shipped from the United States by rail, just as is done when goods are shipped to foreign countries in sea-going vessels. This is intended to supply reliable statistics in connection with rail shipments to Canada and Mexico, something not heretofore obtainable.

A new line of steamers is about to be established between San Diego, Cal., and Mazatlan, Mexico, the first vessel to leave San Diego about January 22, 1893. The steamers will call at Ensedra, Cedres Islands and other way ports. This enterprise has been developed largely through the efforts of H. A. Howard, who has mining concessions at Cedres Island, and, aided by Chicago capitalists, will open mines.

By decree of General Crespo, President of Venezuela, the British port of Trinidad and the Dutch Colony of Curaçoa, may no longer be used as virtual bonded warehouses for goods in transit for Venezulan ports. Importers are required to have their foreign goods brought direct whenever possible, and when not, transfers must be made within Venezuelan territory. Consignments for Barcelona and points upon the coast, between Ciudad Bolivar and La Guayra, not included in the itinerary of foreign steamships, must be landed at the Carupano Custom House, instead of being left at Trinidad, and goods for the western coast towns at Puerto Cabello, and not at Curaçoa.

Of the reciprocity treaties negotiated with the countries in this hemisphere, those with the Spanish West Indies (Cuba included) and Brazil, are so far productive of excellent results. A study of the exports shows large increases. Despite the reported rumors of a desire to nullify the treaty with the Spanish West Indies, the opinion of a large and conservative export house in New York is that, barring the reimposing of a duty on raw sugar, nothing of the kind is likely to happen.

Bicycles.

FIFTH ARTICLE.

POPE MFG. COMPANY, 221 Columbus avenue, Boston, have on the market for '93 the Century Columbia Model 32, Columbia Model 32, a Road Racer, Columbia Model 30. Century Columbia Model 29, Columbia Model 27, Ladies' Columbia Model 31, Ladies' Columbia Model 28, and Columbia Racing Safety. The Century 32 for 1893 retains the best features of last year's machine and has been improved by valuable changes in the details of its construction. It has been reduced in weight, and is a safe machine for fast and hard work. The steering centers have been lengthened nearly 2 inches, and the front tube reduced in size. The brake has been improved by the application of a band on the rear hub. The hubs have been reduced in size, and on the wheels is used the new Columbia hollow felloe, crescent in section, neatly lapped and brazed and covering only a quarter of the circumference of the tire. The Columbia pneumatic tire is continued in use, and is guaranteed as to material and construction for one year from the date of purchase. The 32 Road Racer, stripped of every unnecessary part, fitted with scorcher saddle and rat-trap pedals, weighs 33 pounds. Model 30 is a high-grade machine, exceedingly light, and is designed for expert and intelligent riders who take care of their machines, even while putting them through hard road work. It has a long wheel base, weight 30 pounds, has blue rims and elliptic gear, unless otherwise ordered. Model 29 was first put upon the market at the beginning of 1892, and is made as light as it is reasonable to expect in a machine for hard, all-around road riding. Model 27 is a light roadster safety, particularly suitable for special work of the military corps, for telegraph and postal messengers, &c. It may be supplied with an elastic spring joint, applied at the fork. Model 31 is a new ladies' Columbia for 1893, in which the general lines of its predecessor are followed, though it has been improved in details, and embraces advantages of lightness, strength, convenience, easy running and steering. The brake is a band applied on the rear hub, the machine weighing 38 pounds. Model 28 is supplied with the spring fork and has arrangements for adjusting all parts suitable for any rider within reasonable limits. The Racing safety for 1893, though lighter than their model 30, is closely similar to it in outline and general construction, and weighs 26½ pounds. Columbias are equipped and arranged for special purposes, with a Babcock fire extinguisher and fireman's axe; also for soldiers, with rifle and cartridge case. The United States army has used the Light Roadster safeties during the past year, and in this connection the company have issued a book of Cycle-Infantry Drill Regulations. Elliptic gears, ready to apply to any Columbia safety, are supplied at an additional cost.

JOHN P. LOVELL ARMS COMPANY, 147 Washington street, Boston, manufacturers of Lovell Diamond Cycles, are offering under the common name of Lovell Diamond the following wheels: No. 1, fitted with solid tires, 30 inch front and rear wheels, hubs of drop steel forgings, and all running parts ball bearing. No. 2 is the same as No. 1 in every respect, with the exception of the substitution of 1¼-inch cushion tires for solid tires. No. 3 machine has pneumatic tires, geared to either 57 or 60 inches, the wheel being the same in every respect as their No. 2, but having pneumatic tires. No. 4 is a ladies' wheel, with frame of cold-drawn weldless steel tubing and drop forgings, of the loop pattern with solid tires. No. 5 is the same as the No. 4, except that it has cushion tires. No. 6 is a ladies' pneumatic-tired machine, built the same as their No. 5, with the exception of the tires. Nos. 7 and 8 are convertible for ladies or gentlemen, the No. 7 having solid tires and the No. 8 cushion tires. The No. 9 is a convertible ladies' or gentlemen's machine, with pneumatic tires, geared to 54 or 57. They also make a boys' and youths' safety, cushion tires, ball bearing; the Prize safety, for ladies or gentlemen; the boys' and girls' safety; the Little Beauty safety; girls' Tricycles and boys' all-metal Velocipedes. The company state that on account of the general satisfaction which their wheels gave last season and the number of orders so far received this season for their regular styles, they have

been compelled to turn out their regular ladies', gentlemen's and convertible wheels in solid and cushion tires the same as last year.

THE HARTFORD CYCLE COMPANY, Hartford, Conn., in addition to their pattern C Hartford Safety and pattern D Hartford Ladies' Safety which they made in 1892, are introducing for 1893 patterns E and F. Pattern E is a gentlemen's safety with diamond pattern cold-drawn weldless steel tubing frame, improved ball-bearing steering head, 28-inch wheels, solid rolled steel felloes, swaged spoke, 32 to each wheel; forged steel, detachable ball-bearing cranks, 7 inches throw; elliptic and detachable sprocket wheel, $\frac{7}{8}$ inch cold-drawn weldless handle bars of steel tubing, adjustable as to hight in steering head; vulcanite handles, Elliott self-oiling chain; brake to front wheel of the plunger pattern, Columbia saddle No. 10, with adjustable loop-seat rod; ball pedals, with improved Hartford elastic rubbers, geared to 62 inches; tool bag and tools, all of best patterns. The small parts are finished in nickel balance enameled. It weighs 43 pounds. It is fitted with 1¾-inch Columbia pneumatic tires or with 1½-inch Hartford cushion tires, at different prices. At the option of purchaser it will be furnished with cork handles, round sprocket wheels, 56, 59, 65 or 69 inch gears, or Columbia saddle No. 12. Pattern F is a ladies' safety, with a loop pattern frame, of cold drawn weldless steel tubing, 1¼ inch diameter, No. 14 gauge, improved ball-bearing steering head, 28-inch wheels, solid felloes, swaged spokes, 36 to each wheel; ball-bearings, forged steel detachable cranks, 6 inches through; elliptic and detachable sprocket wheel, handle bars of $\frac{7}{8}$-inch cold-drawn weldless steel tubing, adjustable as to hight in steering head; vulcanite handles, Elliott self-oiling chains, with adjustment at rear forks; brake to front wheel of the plunger pattern, Columbia No. 11 saddle, specially adapted to the ladies' safety, with adjustable loop seat rod; ball pedals, with Hartford elastic rubbers, geared to 56 inches. It has a dress guard of wire netting to rear wheel and chain guard. Tool bag and tools are all of best patterns. Small parts are finished in nickel, balance enameled. The weight is 45 pounds. It is fitted with 1¾-inch Columbia pneumatic tires, or with 1½ inch Hartford cushion tires. At the option of the purchaser it will be furnished with cork handles, round sprocket wheels, geared to 50, 53 or 59 inches, and Columbia saddle No. 12.

H. A. LOZIER & Co., Cleveland, Ohio, make for 1893 the Cleveland No. 4, with pneumatic tire and new double rim. The Burwell bearings are used throughout on the Clevelands, the balls being gauged down to $\frac{1}{4000}$ inch, and the cones to $\frac{1}{2000}$ inch, to secure perfect running parts. The lines have been changed in this year's machine, and the ball-steering head has been lengthened from 10 to 12 inches. The chain for '93 has been improved, every link is gauged so that a perfect fit in the sprocket teeth is gained. The spoon brake is made of sheet steel struck up in dies, and faced with vulcanite rubber where it comes it contact with the tire. The wheel is geared to 63 inches and weighs without the brake 30 pounds. No. 5, their ladies' wheel, while being put on the market for the first time this year, has had practically a year's test, as it is identical in almost every point with the Cleveland No. 4. Instead of a loop frame both tubes from the head to the crank are straight, the upper one coming as low as is consistent with strength and good steering qualities. The angle of the upper tube is such as to cause the dress to fold in around the feet, preventing it being blown by the wind. The mud guards are made of thin gauged sheet steel, beaded on the edges and slightly corrugated. The dress and chain guards are made of woven linen and silk fabric. The Cleveland No. 3 remains unchanged for '93 except in tires, bearings and weight. The tires and bearings are the same as used on their No. 4, while the weight has been reduced to 40 pounds, all on. They also have in course of preparation the Cleveland Racer, which will weigh about 21 or 22 pounds. This will be ready for delivery about February 1.

Weekly Prize Competitions.

$25.00.

FOR MORE than six months Weekly Prize Competitions ($10) have been an interesting and useful feature of the *Pharmaceutical Record*, a journal issued from this office and devoted to the interests of the drug trade. These weekly competitions have related to a variety of technical and business questions of interest to druggists, and have brought out a large amount of information of much service to the readers of that enterprising journal. In view of the success of this feature we have decided to announce a similar series of Weekly Prize Competitions on questions of interest to our readers, and invite a general participation on the part of the trade. As the object of these competitions is to obtain information which will be of practical service to our readers, and to discuss questions in which they are interested, we shall esteem it a special favor if any in the trade will suggest subjects for such competitions, which, if deemed suitable, we shall take pleasure in using.

In each competition there will be three prizes—a first prize of $12.50, a second prize of $7.50 and a third prize of $5. The prizes will be awarded for the answers which in the judgment of the committee of award are most suitable for publication and of the most general interest. These competitions are open to every one, and it is hoped that there will be a general response from business men. Those intending to compete are reminded that it will not be necessary to write long essays, but that comparatively brief and business-like answers to the different questions will be favorably regarded as meeting the purpose for which these competitions are announced. We shall have the privilege of publishing any or all of the contributions received.

Weekly Prize Competition No. 2.

SUBJECT:

How to Keep the Store Neat and Clean.

This competition, which relates to a matter of no little practical importance in the conduct of business, is intended to call out an explanation of desirable methods, and touches upon such points as the following:

The advantages of keeping the store neat and clean;
Difficulties in doing this;
How to sweep and dust, with suggestions in regard to sprinkling, disposition of sweepings, &c.;
Clearing counters and ledge of accumulated stock;
How to avoid the accumulation of odd goods where they do not belong;
The care of show windows;
Methods of receiving and unpacking goods;
Care of goods awaiting arrival of invoice;
The disposition of goods to be called for.

The following prizes will be awarded:

First prize	$12.50
Second prize	7.50
Third prize	5.00

Replies are to be received not later than February 11, 1893. They should be addressed as follows:

DAVID WILLIAMS,
96–102 *Reade street,*
New York.
Weekly Prize Competition No. 2.

The Weekly Prize Competitions noted below are now before our readers and remain open until the dates named:

No. 1. Closing February 4.
How to Avoid the Accumulation of Dead Stock.

No. 2. Closing February 11.
How to Keep the Store Neat and Clean.

Another subject will be announced in our next issue.

Our readers are also reminded of the following Prize Competitions, announced on another page, in each of which four prizes, of $50, $25, $15 and $10, are awarded:

No. 6. Closing February 18.
How Retailers Can Best Advertise and Extend Their Business.

No. 7. Closing February 18.
Travelers' Yarns.

No. 8. Closing February 18.
How to Treat Clerks.

No. 9. Closing February 18.
Shop System of Keeping Track of Jobs.

No. 10. Closing February 18.
Business Maxims—At Least 10.

No. 11. Closing February 18.
How Small Retailers May Keep a Record of Prices.

Trade Items.

THE TESTS as to the relative holding power of Wire and Cut Nails which were adjourned from December 8 were resumed on Monday of this week and are now in progress. The tests are conducted with much care and detail and the work is necessarily slow.

THE MANAGERS and traveling salesmen in the employ of the Kieckhefer Brothers Company of Milwaukee, Wis., enjoyed a banquet given in their honor by the company at the Schlitz Hotel in that city on the evening of the 11th inst. All present agreed that they had a very pleasant time and expressed the common sentiment that the only cause of regret as to annual banquets was that they occurred but once a year.

INDIANA COMMERCIAL TRAVELERS. — Indiana commercial travelers convened their eighteenth annual session at Indianapolis, January 7, with President C. W. Lefler in the chair. In his annual address he said that the organization now has a membership of 1012. Thirteen have died during the last year. Total receipts during the year were $21,943.50; expenses, $22,521.20; balance on hand, $17,491.64. The association took steps toward being represented at the World's Fair during the commercial travelers' proposed holiday week.

THE UNIVERSAL SAD IRON COMPANY of Milwaukee, Wis., state that their Irons are steadily growing in favor. The introduction of a new article to the Hardware trade is necessarily of slow growth, but in localities in which these Irons have obtained a footing in the trade they have proved great favorites with housekeepers, dressmakers and tailors. Nos. 7 and 22 are proving the most popular of the sizes made, they being the largest for families and the largest for tailors, respectively. The Universal is a charcoal Sad Iron, ingeniously arranged to retain fire with a minimum consumption of fuel when the Iron is not in use.

SICKELS, PRESTON & NUTTING COMPANY, Davenport, Iowa, entertained their employees in a novel manner a week or so since. Owing to the fine sleighing, the custom of giving their employees an annual banquet was varied this year, and instead all were treated to an old fashioned sleigh ride. A number of guests were included in the invitation, and tin horns were used effectively. After the ride the company was driven to Mr. Nutting's home, where supper was provided for them. Music and dancing completed the enjoyment of the evening.

SIMONDS MFG. COMPANY, Fitchburg, Mass., and Chicago, Ill., send as a Christmas greeting a colored folder, on the front page of which is a picture of the ship "Santa Maria" and on the back cover a map of the United States, with cities indicated by red dots. The inside pages of the folder are devoted to views of the company's factories at Fitchburg and Chicago, with a list of goods manufactured by them.

UNDER DATE January 9, the Lalance & Grosjean Mfg. Co., New York, and St. Louis Stamping Company, St. Louis, issued a circular in which they advise the trade that they have acquired all patents relating to the manufacture of the ware known as Onyx, including the process of making and the trade-mark Onyx as applied to such goods. In our last issue in referring to this matter we omitted mention of the St. Louis Stamping Company, who, conjointly with the Lalance & Grosjean Mfg. Company, own the patents and trademark in question and unite in the announcement to the trade.

T. M. COX having acquired the interest of E. and W. W. Dilworth in the Hardware, Stove and Implement firm of E. Dilworth & Co., Vermont, Ill., will with his brother, E. G. Cox, continue the business under the firm name of T. M. Cox & Bro.

IN A LARGE FIRE at Charlottetown, Prince Edward Island, a short time since, the Hardware establishment of R. B. Norton & Co. was seriously damaged. A considerable quantity of the stock on the ground floor and in the basement was, however, saved. The total loss is $18,000, which is fully covered by insurance. The firm have secured temporary quarters, where they will remain until the old store is rebuilt. Owing to the isolated position of the province, they advise us that stock cannot be imported before next May, and, in the meantime, they are intending to close out entirely the present stock, opening in the spring with fresh goods. They state that their liabilities will be paid in full as they mature, except for a few days, when some drafts may have to be held until things are straightened out and they begin collecting. The firm carried a large stock of general Hardware, Carriage Goods, Paints, Oils, &c.

THE HARDWARE FIRM of I. G. Sprecher & Son, Ephrata, Pa., was dissolved on the 16th inst., the senior member, I. G. Sprecher, who established the business in 1868, retiring. The business will be continued by Mr. Sprecher's sons, I. Melton Sprecher and William O. Sprecher, who will conduct it under the firm style of I. G. Sprecher's Sons.

THE ENTERPRISE MFG. COMPANY, Akron, Ohio, advise us that they have improved their Luminous Bait by making the luminous properties so that they will not flake off, though the spoon blades or rubber baits may be bent in any shape, thus making Luminous Bait indestructible. The reversible hinge lug is referred to as giving the spoon blade almost automatic revolution, and obviates the heretofore wobbling and jerky motion. It is designed to represent the natural motion of the fish, and as the blade reverses when the fish is caught and runs with the bait, it overcomes the danger of the blade being broken by coming in contact with logs, rocks, &c. Reference is also made to their Flexible Weed Protector and to their Fish Cleaner, both of which are finding favor with sportsmen.

THE SCHREIBER, CONCHAR & WESTPHAL COMPANY, Dubuque, Iowa, in connection with their wholesale Hardware business, have erected a two story building, 96 x 126 feet, in which the manufacture of Shelf and Builders' Hardware will be prosecuted. On the first floor of the building is the machinery used in the manufacure of this line of goods. The japanning and enameling departments are also on this floor, there being special rooms for each, with separate drying ovens. A special process is employed in preparing the enameling, which is referred to as perfectly white and hard as glass when finished. The packing and heavy stock are also carried on this floor. The second floor contains the plating, pattern, designers' and stock rooms. The patterns are all in brass and are kept in a fire-proof vault in the rear of the building. All the machinery and furnishings of the building are described as of the latest designs. The entire plant is heated by steam and lighted by electricity. The factory is now in operation, with a working force of 40 hands.

W. W. CRANDALL, who has for the past eight years acted as manufacturers' agent, 4 Warren street, New York, and 180 North Market street, Nashville, Tenn., has associated with himself P. C. Cauthorn, who is referred to as a practical young Hardwareman, under the firm name of W. W. Crandall & Co. Mr. Crandall is well known to the trade of the South, among whom he has traveled extensively. The headquarters of the firm will be in Nashville. They will continue to represent the Ausable Horse Nail Company, Richardson Bros., Maxwell, Rowland & Co., Lansing Wheelbarrow Company, Kelly Axe Mfg. Company, Ferris Hame Company, Empire Plow Company, and Morrow Bros. Mfg. Company, and also Wallace & Sons, whose agency has just been secured.

BURDITT & WILLIAMS, sole agents and importers of the genuine Marty Rat and Mouse Traps, 20 Dock Square, Boston, Mass., illustrate the Trap in their advertisement on another page. They state that they have recently received large shipments of these Traps and are now in a position to supply them promptly. They have commenced legal proceedings to stop the importation, manufacture and sale of imitation Traps which infringe upon the letters patent relating to the Marty Trap, which they control.

THE *Lawn*, a paper published by the Coldwell Lawn Mower Company, Newburg, N. Y., is devoted to the art of lawn culture, with suggestions for caring for lawns and for buying Lawn Mowers. Illustrations are given of Coldwell's Standard, New York, and Coldwell's Horse Mowers; also of the Imperial Ratchet, which is used in the construction of these machines.

THE HON. T. H. ANDERSON, United States Minister to Bolivia, says in a recent letter to the Department of State, Washington, D. C., that the industry of working wood by machinery is a growing one in South America, and the trade for all classes of wood-working machinery is given to the United States. The Egan Company, Cincinnati, Ohio, is referred to as controlling a large part of the trade in this class of machinery.

CHANTRELL TOOL COMPANY, Reading, Pa., and 113 Chambers street, New York, have recently erected a commodious plant at Millmont, near Reading, having shipping facilities at the works over both the Pennsylvania and Reading railroads. The buildings are of brick, substantially built on a plot of ground of 3½ acres. The entire works are heated by steam and lighted by arc and incandescent electric light. Power is furnished by a 14 x 36 Hamilton Corliss Engine. The company have remodeled their tools, and are now manufacturing an entirely new line of goods.

H. H. BEERS, who for years has attended to the Cutlery interests of Wiebusch & Hilger in the South, has severed his connection with that firm, dating from December 31, 1892, and hereafter will represent the following houses in the same territory, viz: Jos. F. McCoy Company, New York, English and German Hardware, Coates' Clippers, &c.; F. B. Gurney, New York, Wostenholm's Knives, Razors, Carvers and Farriers' Knives, Wade & Butcher's and Bengal Razors; Schmachtenberg Bros., New York, German Pocket Knives, Razors and Scissors; Hatch Cutlery Company, South Milwaukee, Wis., Shears, Ladies' Scissors and tinners' Snips.

THE HARDWARE TRADE will, no doubt, be surprised at the announcement herewith made that John M Waddel, well known as the originator and founder of the manufacturing Hardware specialty business successfully conducted under the name of the John M. Waddel Mfg. Company, at Greenfield, Ohio, has disposed of one-half of his stock in the incorporated company, and is no longer actively connected with that concern in his capacity of secretary and general manager.

PRIZE COMPETITIONS.

WE HEREBY ANNOUNCE a series of six prize competitions relating to trade matters in which our readers are interested. Four prizes of $50, $25, $15 and $10 will be awarded in each competition.

The competitions are open to all and a general participation on the part of the trade is invited.

We shall have the privilege of publishing any or all of the contributions received.

The committee of award in assigning prizes will take into account the merit of the different contributions and their suitability for publication.

PRIZE COMPETITION No. 6.

How Retailers Can Best Advertise and Extend Their Business.

The object of this competition is to obtain practical suggestions as to the methods which the retail dealer in Hardware, Stoves, Tinware, &c., can advantageously adopt in building up his business, and is intended to cover such points as the following:

Advertising in the local papers, with suggestions as to how such advertising should be done and to what extent;
The manner in which circulars and other printed matter may be used;
A description of any special or unusual methods of attracting and holding trade; and
General suggestions in regard to ways in which the business can be extended.

An account of any methods which have been found useful in building up trade will be suitable under this competition.

First Prize	$50.00
Second Prize	25.00
Third Prize	15.00
Fourth Prize	10.00

This competition will be open until the close of business February 18, 1893.

Contributions should be addressed to David Williams, 96–102 Reade street, New York, and marked Prize Competition No. 6.

PRIZE COMPETITION No. 7.

Travelers' Yarns.

The traveling salesman is proverbially happy in the stories which he narrates, and this competition is for the purpose of calling out a collection of good yarns for publication. While the attention of travelers is specially invited to this competition, it is open to all. Stories relating more or less closely to trade or business matters will be preferred.

First Prize	$50.00
Second Prize	25.00
Third Prize	15.00
Fourth Prize	10.00

This competition will be open until the close of business February 18, 1893.

Contributions should be addressed to David Williams 96–102 Reade street, New York, and marked Prize Competition No. 7.

PRIZE COMPETITION No. 8.

How to Treat Clerks.

Under this competition, beside a general discussion of the subject, such questions as the following may be considered:

The extent to which clerks should be given an opportunity of obtaining a knowledge of the business, and of price-lists, prices, &c.;
Whether it is desirable to have formal rules for the regulation of employees and for the management of the store. If so, a set of rules should be submitted;
To what extent clerks should be held responsible for their mistakes;
Suggestions as to how clerks should be treated in order to secure their most intelligent and efficient work;
Mistakes made in the treatment of clerks.

This competition opens an important subject and it is hoped that it will be discussed fully by merchants and by their clerks from their different points of view.

First Prize	$50.00
Second Prize	25.00
Third Prize	15.00
Fourth Prize	10.00

This competition will be open until the close of business February 18, 1893.

Contributions should be addressed to David Williams, 96–102 Reade street, New York, and marked Prize Competition No. 8.

PRIZE COMPETITION No. 9.

Shop System of Keeping Track of Jobs.

This competition is intended to call out information in regard to methods of keeping account of the cost of labor and material on tin-shop work, repairing and new work, inside and outside. In connection with the general subject such points as the following may be touched upon:

Whether blanks or forms are used in connection with such work. (If so, samples should be submitted);
What record is kept of orders, costs of jobs, charges, &c.;
How time occupied in going to and from the job is covered;
Suggestions in regard to the profitable conduct of the shop.

To illustrate the system it is desirable that a specific job (as for example, repairing down spouting and eave trough, or other job of repairing in which new material is used) be referred to and the method of keeping track of the costs in such job fully explained.

First Prize	$50.00
Second Prize	25.00
Third Prize	15.00
Fourth Prize	10.00

This competition will be open until the close of business February 18, 1893.

Contributions should be addressed to David Williams, 96–102 Reade street, New York, and marked Prize Competition No. 9.

PRIZE COMPETITION No. 10.

Business Maxims—At Least 10.

Those entering this competition will send at least ten maxims relating to the conduct of business, presenting in a brief and pithy manner practical suggestions which may advantageously be followed.

First Prize	$50.00
Second Prize	25.00
Third Prize	15.00
Fourth Prize	10.00

This competition will be open until the close of business February 18, 1893.

Contributions should be addressed to David Williams, 96–102 Reade street, New York, and marked Prize Competition No. 10.

PRIZE COMPETITION No. 11.

How Small Retailers May Keep a Record of Prices.

The object of this competition is to call out information or suggestions in regard to the best methods to be adopted in keeping a record of prices, showing cost or selling prices, or both cost and selling prices, of Hardware, Stoves, Tinware, &c., in a small retail store employing not more than four persons in the selling and bookkeeping departments, including the proprietors. Those entering the competition are expected to give a concise and clear explanation of their system, and if a price book is used, to submit as illustrating the system at least three specimen pages. If a price book is referred to it may be of any design or arrangement best adapted to the purpose, and may be original with the contributor or may be one of the different price books on the market. Fictitious names should be used instead of the real names of jobbers and manufacturers.

The committee in awarding prizes will take into account the merit of the different systems described, the character of the descriptions given, and the general utility and interest of the contribution.

First Prize	$50.00
Second Prize	25.00
Third Prize	15.00
Fourth Prize	10.00

This competition will be open until the close of business, February 18, 1893.

Contributions should be addressed to David Williams, 96–102 Reade street, New York, and marked Prize Competition No. 11.

Buck Brothers,

OUR READERS will observe in another column the announcement of the death of Richard T. Buck of Buck Brothers, Millbury, Mass. The business of this house for a number of years past has been managed by Edward M. Wood and William L. Proctor, sons in-law of Mr. Buck. Mr. Wood was brought up in the Hardware trade and carried on the business 12 years in Worcester, Mass., leaving it in 1884 to devote his whole attention to the Edge Tool business. Mr. Proctor was born in Sheffield, England, and came to this country in 1887. He learned all the details of Steel manufacture under the direction of his father, who was for 50 years with the firm known in this country as Naylor & Co. For 40 years the reputation of the tools made by Buck Brothers has been maintained, and it is the determination of the present managers to continue in the course so clearly laid down in the past—only best English cast steel and the most skilled workmen employed, and a constant personal supervision devoted to the business. Buck Brothers extend their thanks for past favors, and solict a continuation of the same. Prices remain unchanged.

T. H. Chubb Rod Company's Catalogue.

T. H. CHUBB ROD COMPANY, Post Mills, Vt., issue their retail catalogue for 1893, embracing Fishing Rods and Anglers' Supplies. Illustrations, descriptions and prices are given of Fishing Rods, Turned Stock for Fishing Rods, Reels, Fish Hooks, Trolling Spoons, Artificial Flies, Fly Books, Bait Boxes, Trout Baskets, Fishing-Rod Holder, Pocket and Hunters' Knives, &c. The catalogue is presented in the usual handsome style which has characterized issues of previous years, and the goods represented are nearly all manufactured by the company. The goods not of their make, but described in the catalogue, are made to order and are carefully selected. Rods to be repaired should be sent before April 1 if possible.

Calendars.

JOS. A. BOGARDUS, 167 Chambers street, New York, presents an attractive 1893 calendar, on which attention is called to Hardware, Agricultural Implements and House-Furnishing Goods, of which he is wholesale dealer and jobber. The larger portion of the card, to which the date sheets are attached, is devoted to a colored winter landscape.

WE PRESUME, in the nature of things, there must be some limit to the expense and elaboration of New Year calendars that are sent out by manufacturing firms and others to their friends and customers. If there be a limit of this sort, however, to these New Year souvenirs, we think it has been about reached by Ginna & Co. of New York, who favor their friends with a beautiful example of artistic decoration. It is a sheet of 14 x 20 tin, framed in white and gold, and carrying at the lower corner a pack of 36 shield-shaped calendar sheets, telling the days of the months for the ensuing three years. A feature of the publication, if we may so call it, is the decoration of the sheet, which shows a group of poppies and small birds. The coloring is exquisitely done and the design is thoroughly artistic.

THOMAS TOWNE, Eastern sales agent for the Union Drawn Steel Company, Electrical Exchange Building, New York, sends to the trade an 1893 greeting. This is in verse, the burden of which is a kindly remembrance for '92, with its troubles and joys, and wishes of good cheer and prosperity for the coming year.

LAFLIN & RAND POWDER COMPANY, 29 Murray street, New York, send a handsome colored calendar hanger, upon which Orange Extra Rifle Powder is prominently brought to notice. The upper portion of the hanger is occupied by a hunting scene. Under this are representations of various Powder packages. Calendar sheets are attached to the lower end of the card.

THE UNION METALLIC CARTRIDGE COMPANY, Bridgeport, Conn., with agencies at New York and Chicago, send a handsome colored metal-end hanger, to the lower part of which calendar sheets for 1893 are attached. The picture above the date sheets is an effective hunting scene. The coloring makes the picture an exceptionally attractive one.

FALLS HOLLOW STAYBOLT COMPANY, Cuyahoga Falls, Ohio, are sending out a metal-end hanger, finished in colors, to which calendar leaves for 1893 are attached. The larger portion of the card is taken up with a picture of a lady; while at the top attention is called to their Hollow Staybolt Iron, patent mandrel rolled, for use in locomotives, marine and stationary boilers. These are made in all sizes from ⅜ to 2 inches outside diameter, with any size hole required, from ⅛ to ¾ inch.

H. MUELLER GUN COMPANY, Decatur, Ill., send with the compliments of the season a calendar for '93, the upper portion of the card being devoted to a picture, "The Woods in October," from a painting by Hardy. Underneath the picture attention is called to a line of general Sporting Goods and fine Pocket Cutlery, in which they are dealers. Date leaves are attached at the bottom of the card.

JOHN P. LOVELL ARMS COMPANY, Boston, Mass., send a metal-end hanger, handsomely executed in colors, upon which the various athletic sports are illustrated. A group of riders on Lovell Diamond Cycles inclosed within a diamond-shaped border, form the prominent figure, below which are two hunters using the Champion Gun effectively. At the top and one side of the hanger are views of fishing, tennis and baseball players, scullers, &c. The calendar sheets attached to the lower part of the hanger carry out the diamond idea in their ruling and coloring.

Price-Lists, Circulars, &c.

COVERT MFG. COMPANY, West Troy, N. Y.: Covert Harness Snaps, Web and Rope Goods, Chain Goods, &c. Their 1893 catalogue illustrates these goods, with prices, embodies important changes and new articles. The list prices of their old-pattern Loop Snaps have been changed and a uniform discount given on the same, which greatly reduces the net price. A change in list has also been made on their Open-Eye Trace Snap, and the new discount brings all sizes of the old pattern Open-Eye Snaps much lower than formerly. For the convenience of buyers and salesmen is inserted on the last pages of the catalogue a complete tabulated list, in numerical rotation, of all the numbers used to designate the goods, with their catalogue page and list price.

THE CONSOLIDATED FRUIT JAR COMPANY, New Brunswick, N. J., and 49 Warren street, New York: Sheet Metal Goods. They have just issued an illustrated catalogue and price-list of 100 pages, 8 x 10 inches, handsomely printed on fine plate paper, containing a portion of their products. They announce that a large proportion of their production is proprietary goods, a specialty being the manufacture of such articles, and call attention to the fact that they will at all times be pleased to furnish estimates thereon. Among the articles noticed in the catalogue is a large assortment of Oilers and Spouts, Fruit Jar Trimmings, Can Screws of almost every description, Sprinkler Heads, Ferrules, Lubricating Cups, Torch and Collapsible Tubes, Electric Light Fixtures, Tin Boxes, Rosettes and Ornaments, principally sheet metal goods. Attention is called to their extensive experience in making Glass Molds for use in their own business, which has resulted in opening their shop for orders from the trade generally. They refer to their facilities in this line as unsurpassed.

GRISWOLD MFG. COMPANY, Erie, Pa: Stove Furniture and Erie Hollow Ware. Their catalogue illustrates, with prices, this line of goods, and states that a discount sheet for this new catalogue, suspending all their old catalogues and discounts, will be furnished on application. The book is handsomely printed on a fine quality of paper and bound in flexible cloth covers. It is stated that each piece of Erie Hollow Ware is examined by five different inspectors, thus insuring perfect work in each department. All goods except Pots, Kettles and Tea Kettles are packed in barrels with kiln dried sawdust, no charges being made for packages or drayage.

AMERICAN CURRY COMB COMPANY, Troy, N. Y., New York saleroom with Fuller Brothers, 33 Chambers street: Their 1893 catalogue illustrates the patterns of Curry Combs of Sweet & Clark Company, Edward S. Hotchkiss, Southington Cutlery Company, William P. Kellogg, New York Stamping Company, and Edwin Hills, who comprise the American Curry Comb Company.

THE WRIGHT SHOVEL COMPANY, Anderson, Ind., S. A. Haines Company, Indianapolis, Ind., agents: Solid Steel Shovels, Scoops and Spades. The Wright Shovel Company changed their location from Beaver Falls, Pa., to Anderson, because of the abundance of natural gas fuel and of timber for handles. They have a rolling mill producing their own Steel, and state that their goods will hereafter bear an additional label, reading "Warranted High Carbon Steel." In these goods the blade and the strap are of one piece, not riveted, and particular attention is directed to the line of Railroad Shovels and also to their Scoops, including Locomotive, Coal, &c. Their catalogue for 1893 illustrates the full line Shovels, Scoops and Spades, accompanied by list prices.

MILTON MFG. COMPANY, Rolling Mills, Milton, Pa.: Wrought-Iron Plate Washers a specialty, also Hot-Pressed Nuts, Bolts, Bolt Ends, Boiler and Bridge Rivets, Cold-Punched Square and Hexagon Nuts. Their catalogue contains illustrations and prices of these goods. List of sizes given of Wrought Plate Washers specify some of the principal sizes made by them. They have dies, however, to cut many sizes to suit the various trades and their specialties. They also state that in Hot-Pressed Nuts, Bolts, Bolt Ends, Boiler and Bridge Rivets they have the best facilities, and that their product is of the highest as pertains to quality and workmanship.

HILL DRYER COMPANY, Worcester, Mass.: Clothes Dryers and specialties in Wooden Ware. The line of goods manufactured by this company includes the Champion Clothes Dryer for yard, Balcony Clothes Dryer for back balcony, Folding Ironing Tables, Folding Wash Benches, Folding Pantry Steps, Clothes

Horses, Step Ladders, Pastry, Meat, Bread, Shirt and Sleeve Boards, Camp Stools, Pillow Sham Holders, &c.

THE LAMSON & SESSIONS COMPANY, Cleveland, Ohio: Bolts, Nuts, Wrenches, &c. Their catalogue is well arranged, the goods in departments, with index, so any kind of goods made by them can be instantly turned to. They have made additions to the line of goods heretofore manufactured by them, prices and illustrations of which are given in the catalogue.

THE CENTRAL STAMPING COMPANY, New York: Sheet Metal Ware. A handsome catalogue gives illustrations of articles selected from their large catalogue, the coloring and decorations being copied from regular goods and represent the extensive lines of House-Furnishing Sheet Metal Ware which they manufacture. Illustrations in color are given of Royal Copper Tea Kettles, Royal Copper Tea Kettles, nickeled; Crumb Pans and Brushes, Children's Fancy Trays, Tea Trays and Coal Vases.

HARBER BROS. COMPANY, Bloomington, Ill.: Large wall calendar, handsomely lithographed in colors. A heavy sheet with metal edges forms the back of the calendar. On it is printed a view of the company's fine six-story warehouse, together with the names of the company's officers and a list of the goods which they handle. Leaflets for the months are attached to the sheet, being sufficiently large to make a good calendar for ready reference across a counting room.

RICHMOND CEDAR WORKS, Richmond, Va., and 107 Chambers street, New York: White and Red Cedar and Oaken Ware, Clothes Pins, &c. Illustrations are given of Steel and Stave Handle Tubs, White Cedar Pails, Keelers, Covered Water Cans, Dash Churns, Cedar Horse Pails, Metal-Plug Field Cans, new King and Crown Well Buckets, Moth-Proof Red Cedar Chests, Cedar Cylinder Churns, Monumental Churns, Carter's Patent Butter Tub and Top, &c.

HORTON, GILMORE, MCWILLIAMS & CO., 172, 174 and 176 Lake street, Chicago: Cutlery catalogue. This is a very fine new Cutlery catalogue, which comprises some of the most desirable patterns in the large stock of the company. In an introduction to the catalogue the company state that all their warranted Cutlery is made chiefly by American manufacturers, by skilled workmen of highest reputation, from only the best material, and is first class in every particular. They offer a warranty on Pocket Knives, stating that they will replace without charge such of their warranted Pocket Knives as are actually imperfect and but little used. The catalogue comprises 56 broad pages. An index, which is very comprehensive and well arranged, is found on the first page. The contents begin with Pocket Knives, of which an unusually large assortment is shown, covering not only the usual patterns, but also specialties of almost every character found in the trade. These are followed by Razors, next come Shears, then Scissors in very great variety, after which are Knives and Forks, Butcher Knives, Hunting and Bowie Knives, Carvers, in great variety and of exquisite finish; Steels, Silver-Plated Spoons, Forks, &c.; Dessert Knives and Forks, Fruit Knives, Sugar Spoons, Ivory Antique Cutlery, Steel Curling Irons, &c.

BLAIR HUSKING GLOVE COMPANY, Bucyrus, Ohio: Blair's Husking Pins, Gloves, &c. A circular illustrates Gloves and Pins, with descriptions and prices. Especial mention is made of the fact that their Gloves are packed part medium and large sizes in a box, and that their sizes run large. Left Handed Gloves are packed separately.

UNION CYCLE MFG. COMPANY, Boston, Mass.: Union Bicycles. The company issue a circular folder, on the outside leaves of which are illustrations of the Union P. D. Q. and Union No. 3, their productions for the season of 1893. The inner pages explain the points of excellence the machines possess. In reference to the Union P. D. Q. Wheel they remark: U O 2 C A P. D. Q. 4 Y? It is O K, and 10 to 1 'twill tick L U, unless U R A J.

L. B. ALBISER, Worcester, Mass.: Lightning Postage Indicator Scale. By the aid of a graduated card attached to the beam and used in connection with the poise the correct amount of postage required on the different classes of mail matter is instantly indicated. The advantages claimed for this device are that it saves postage by preventing over stamping, that mail matter is not delayed because of incorrect stamping, and that it is simple in construction and in use.

S. L. ALLEN & CO., Philadelphia, Pa.: The Planet, Jr., Garden and Farming Tools. Descriptions, illustrations and prices are given of Garden Seed Drills, Wheel Hoes, Horse Hoes, Harrows, Levelers, Cultivators, Celery Hillers, Potato Diggers, &c. The manufacturers remark that the goods presented for 1893 are strong, durable, effective at work and adapted to their intended purpose, and that every one of the Tools is a labor saver and money earner.

RIDGWAY REFRIGERATOR MFG. COMPANY, Philadelphia, Pa.: Cold Storage Buildings, Ice Houses and Domestic Refrigerators. Their catalogue illustrates, with prices, a line of Ridgway and also of Keystone Refrigerators, each made in domestic and sideboard styles. The manufacturers state that the various kinds of provisions, fruits, butter, milk, &c., can be kept in the same compartment without one becoming tainted with the flavor of the other.

JOHN C. KUPFERLE, St. Louis, Mo.: Brass and Iron Specialties, for plumbers, railway and agricultural supply houses. The catalogue, No. 16, is handsomely bound in stiff cloth covers, fine quality paper, with illustrations, descriptions and prices of the goods named. In compiling the catalogue it has been their endeavor to incorporate in it the principal plumbing and water works specialties manufactured by them, as well as a complete line of such other goods as are used by the plumbing trade. Since issuing their last catalogue they have added Lavatory, Tank and Sink Brackets.

GURNEY REFRIGERATOR COMPANY, Fond du Lac, Wis.: Gurney Refrigerators. Illustrated circulars give interior and exterior views of these goods, also of the Removable Galvanized Ice Compartment. The points of excellence possessed by these goods are strongly brought out in verse, under the heading "Mary Brown's Neighbor," accompanied by an illustration. For this Refrigerator the managers claim cleanliness, free circulation, economy in the use of ice, condensation and dry air, low average temperature, freedom from condensation on the inner walls, freedom from damage by the use of ice picks, proper location of drip pipe and long life.

THE FORD BIT COMPANY, Holyoke, Mass.: The Ford Patent Bits. The company issue a tasty folder explaining the principle upon which their Bits are constructed; they refer to the tests to which the Bits have been subjected, state their points of superiority and the methods used in their manufacture, also call attention to the quality of the goods. The manufacturers claim that these Bits bore easily, are warranted not to clog, and that they will positively free themselves in any wood.

Exports.

THE EXPORTS from the port of New York to foreign markets for the week ending January 7, 1893, exclusive of specie, amounted to $6,515,380. The following are the exports of Hardware, Machinery, Metals and related goods. The totals following each port or country are the total value of exports to such port or country exclusive of specie. The items for Canada and Mexico include merchandise by seagoing vessels only:

ANTWERP.—Total, $168,855.

Electric Material	$2,146	Machinery	$550
Organ	70	Bobbins	102
Agricult. Implts.	230	Firearms	2,006
Mineral Fiber	3,400	Hardware	990
Manuftd Iron	100		

AMSTERDAM.—Total, $2,508.

Lock Boxes	$233

ABERDEEN.—Total, $724.

Hardware	$230

ARGENTINE REPUBLIC—Total, $24,303.

Organs	$365	Scales	$644
Hardware	1,353	Machinery	6,160
Manuftd Wood	642	Manuftd Iron	887
Emery Cloth	485	Cotton Lines	756
Agricult. Implts.	3,220	Lamp Goods	1,689
Pumps	440	Electric Material	10

AUSTRALIA.—Total, $155,003.

Carriage Material	$1,613	Hardware	$9,471
Lamp Goods	2,110	Woodware	2,482
Manuftd Iron	9,392	Manuftd Wood	3,075
Clocks	1,696	Agricult. Implts.	1,130
Organs	1,550	Pumps	677
Twine	8	Typewriters	1,734
Slates	28	Watches	132
Machinery	3,175	Wheels and Axles	1,003
Rubber Goods	201	Slate	2,970
Tin Boxes	861	Scales	182
Plated Ware	1,056	Toy Pistols	116
Curry Combs	64	Firearms	3,566
Dog Collars	25	Gun Primers	119
Brushes	101	Cages	146
Wagons	120	Tinware	581
Grindstone Fixtures	42	Nails	690
Cartridges	1,728	Sandpaper	11
Wire Goods	65	Saws	432
Wringers	153	Razor Strops	58
Stone	30	Freezers	340
Beehive Material	200	Fish Lines	30
Speaking Tubes	75	Stencils	21
Cutlery	975	Steel	65
Eyelets	290	Agate Ware	405
Needles	155	Valves	415
Household Goods	82	Carpet Sweepers	10
Fruit Jars	231	Velocipedes	16
Perambulators	34	Windmills	135
Tacks	49	Stone	42

BERLIN.—Total, $2,378.

Machinery	$1,460	Cash Registers	$700
Electric Material	277	Typewriters	486

BRITISH WEST INDIES.—Total, $164,243.

Manuftd Wood	$268	Windmills	$429
Twine	49	Trunks	28
Clocks	111	Carts	290
Horse Collars	88	Typewriters	60
Carriages	1,850	Wringers	27
Electrical Mati	1,647	Saws	11
Refrigerators	165	Cutlery	15
Sewing Machines	50	Money Drawers	300
Hardware	579	Hose	30
Manuftd Iron	1,240	Iron	54
Lamp Goods	148	Baby Cabs	66
Woodware	516	Elect.-Pltd Ware	40
Gas Cylinders	270	Slates	55
Gymnastic Goods	175	Surg. Insts.	85
Carriage Material	307	Wheels and Axles	94
Organs	117	Machinery	292
Nails	342	Electros	20
Scales	138	Agricult. Implts.	195
Show Cases	25	Iron Pipe	156
Wheelbarrows	43	Loaded Shells	14
Rubber Goods	124	Iron Safes	44

BREMEN.—Total, $127,569.

Manuftd Iron	$213	Sewing Machines	$15
Machinery	565	Screens	10
Lamp Goods	20	Cutlery	180
Electric Material	425	Hardware	287
Rubber Goods	50	Pumps	105
Agricult. Implts.	1,182	Typewriters	20

BREMERHAVEN.— Total, $255.

Shears	$30

BELFAST.

Sewing Machines	$696

BRITISH GUIANA.

Sewing Machines	$24

BRITISH HONDURAS.—Total, $110.

Sewing Machines	$60

BRUSSELS.

Iron Safes	$225

BRAZIL.—Total, $348,125.

Manuftd Wood...	$86	Pumps.....	$171
Lamp Goods.....	2,328	Hardware.....	4,670
Tacks.....	164	Manuftd Iron....	1,154
Velocipedes.....	619	Turntable	1,125
Agricult. Implts..	865	Perambulators...	225
Musical Instr....	1,615	Shawl Straps.....	170
Sandpaper.....	384	Saws.....	181
Plated Ware.....	900	Bicycles.....	70
Watches.....	1,041	Clocks	184
Manuftd Steel....	89	Fuse	287
Firearms.....	1,987	Woodware.....	219
Stone	13	Cartridges	1,453
Bird Cages.....	48	Scales.....	887
Baby Carriages...	30	Tinware.....	63
Nails.....	206	Celluloid Goods..	80
Cutlery.....	3,298	Rubber Goods....	500
Blocks.....	75	Sewing Machines.	2,662
Wheels.....	700	Nails	281
Agate Ware.....	92	Cars.....	137
Cotton gin.....	345	Electric Material.	120
Store Trucks.....	115	Twine.....	703
Trunks	223	Machinery.....	1,033
Tricycles.....	100	Railroad Car.....	2,300
Safe Parts.....	1,000	Iron Safes	412
Locomotive Material.....	1,916	Tin.....	100
		Silex	526

BRITISH POSSESSIONS IN AFRICA.—Total, $161,952

Miss. Goods.....	$384	Cartridges.....	$656
Hardware.....	11,467	Nails	124
Pumps.....	317	Agricult. Implts.	20,010
Slates.....	177	Manuftd Wood...	28,837
Trunks.....	250	Carriage Material	4,020
Wheelbarrows....	620	Organs.....	652
Manuftd Iron....	10,681	Rubber Goods....	345
Store Trucks.....	131	Cutlery.....	2,190
Woodware.....	1,462	Scales.....	752
Packing	12	Lamp Goods.....	40
Windmills.....	315	Clocks.....	605
Carts.....	584	Nails	795
Fiberware.....	490	Firearms.....	500
Machinery.....	1,895	Saws.....	24
Typewriters.....	80	Ammunition.....	100
Carriage.....	450		

BOLIVIA.

Scales.....	$605	Railroad Material.	$847
Hardware.....	194	Firearms.....	70
Lamp Goods.....	127	Manuftd Wood...	305
Manuftd Iron....	1,550	Freezers.....	28
Cartridges.....	22	Clocks.....	25
Woodware.....	60	Watches.....	40
Plated Ware.....	16	Locomotive.....	3,650
Car Material....	36,275	Steel.....	500
Machinery.....	63,000	Hoists	1,050
Turntables.....	5,300	Iron Pipes.....	55,850

BRITISH EAST INDIES.—Total, $82,759.

Scales.....	$370	Firearms.....	$118
Pumps.....	166	Hardware.....	190
Clocks.....	400	Lamp Goods.....	120

CHINA.—Total, $46,019.

Coal.....	$341

CUBA.—Total, $282,278.

Hardware.....	$9,136	Velocipedes.....	$25
Manuftd Iron....	2,881	Manuftd Wood...	2,574
Woodware.....	48	Lamp Goods.....	1,145
Wagons.....	886	Machinery.....	19,908
Locomotive Matl.	1,080	Hats.....	250
Scales.....	2,984	Trucks.....	74
Nails.....	287	Agricult. Implts.	660
Freezers.....	63	Wagon Material.	600
Valves.....	251	Cutlery.....	2,695
Metal Goods.....	46	Nails.....	1,436
Clocks.....	681	Stones.....	64
Grindstones.....	116	Wire Goods.....	24
Building Matl....	185	Tinware.....	292
Iron Safes.....	240	Car Material.....	14,390
Manuftd Steel....	1,275	Railroad Matl.....	8,685
Coal.....	13	Powder.....	58
Steel Rails.....	1,510	Iron.....	1,742
Lubricators.....	41	Manuftd Copper..	276
Electrical Matl...	2,346	Iron Pipe.....	2,015
Brushes.....	82	Rubber Goods....	340
Valises.....	29	Brass Goods.....	664
Tacks.....	91	Packing.....	160
Spikes.....	416	Blower.....	32
Handcars.....	262	Sugar Cars	3,245
Windmills.....	68	Gas Apparatus...	200
Saws.....	887	Organs.....	190
Dumpships.....	275	Gym. Goods.....	120
Locomotives.....	8,700	Waterwheel Matl.	340
Tinfoil.....	18	Pumps	20
Boiler Tubes.....	807	Carriage Matl ...	140
Carriage.....	625	Cans.....	208
Hose.....	57	Wheels and Axles	390
Refrigerators....	85	Plated Ware.....	214
Sandpaper.....	268	Tinfoil.....	104
Belting	322	Plumbers' Material	150
Wheelbarrows....	55	Trunk Matl.....	487
Bicycles.....	82		
Bellows.....	27		

CENTRAL AMERICA.—Total, $58,419.

Manuftd Wood...	$27	Manuftd Iron....	$1,378
Woodware.....	177	Lamp Goods.....	346
Shot	17	Sandpaper.....	47
Pipes	246	Machinery.....	2,403
Scales.....	309	Manuftd Copper..	764
Fuse.....	76	Nails.....	112
Electrical Matl...	468	Powder.....	292
Hose	40	Boiler Material...	1,309
Clocks.....	55	Trunks	40
Sandpaper.....	32	Rubber Goods....	136
Percussion Caps..	50	Tinware.....	79
Refrigerator.....	19	Valves.....	14
Locomotive.....	8,200	Sewing Machines.	426
Cutlery.....	46	Sewing Mch. Mtl.	11
Saws.....	192	Agricult. Implts..	191
Oil Tanks.....	118	Brass Goods.....	75
Carriage.....	65	Gymn. Apparatus	44
Grindstone.....	12	Water Closets....	119
Bellows.....	14	Coal.....	220
Brushes.....	14	Pulleys.....	130
Agricult. Implts.	16	Belting.....	70
Hardware.....	2,047		

CANADA.

Primers.....	$225

CHILL.—Total, $178,101.

Clocks.....	$952	Nails.....	$517
Hardware.....	12,253	Fruit Jars.....	41
Manuftd Iron	7,754	Woodware.....	74
Sandpaper.....	445	Lamp Goods.....	1,994
Cartridges	241	Pumps	333
Sandstone	102	Cash Registers....	640
Scales	2,284	Nails	5,699
Machinery.....	15,354	Rubber Goods....	1,828
Manuftd Wood...	2,640	Agricult. Implts..	2,340
Windmill	60	Cutlery.....	928
Tacks.....	258	Trunks.....	307
Iron Safes.....	270	Saws.....	153
Iron.....	38	Slates.....	33
Grindstones.....	85	Carpet Sweepers.	66
Brushes.....	235	Watches.....	230
Lines.....	261	Wheel Barrows...	190
Electrical Matl...	20	Velocipedes.....	43
Watch Cases . .	83	Tinware	25
Washing Machs..	15	Store Trucks.....	20
Plumbing Matl...	270	Gas Fixtures	80
Asbestos Millboard	78	Show Cases.....	40
Carriages.....	928	Sewing Machines.	1,061
Belting	560	Stamping Matl...	21
Plated Ware.....	2,233	Asbestos Cement	108
Firearms.....	1,428		

DUBLIN.—Total, $236.

Windmills.....	$19

DUTCH EAST INDIES.—Total, $367.

Lamp Goods	$160

DANISH EAST INDIES.—Total, $3,743.

Scales.....	$14	Store Truck.....	$18

DENTON.

Sandpaper.....	$535

DUTCH WEST INDIES.—Total, $28,234.

Manuftd Wood...	$6	Tricycles.....	$18
Woodware	33	Store Trucks.....	6
Bird Cages.....	5	Watches.....	34
Tacks.....	101	Clocks	12
Hardware.....	161	Yellow Metal.....	100
Manuftd Iron....	384	Truck Matl.....	8
Lamp Goods.....	55	Pumps.....	5
Freezers	13	Springs.....	14
Sewing Machines.	28	Electrical Matl...	1,750
Machinery.....	15	Percussion Caps..	10
Tinware.....	57	Windlass.....	54
Eyelets.....	16	Carriages.....	120
Typewriters.....	38		

ECUADOR.—Total, $34,242.

Scales.....	$634	Manuftd Iron....	$5,844
Iron Safes.....	275	Woodware.....	1,257
Machinery.....	3,068	Cutlery.....	240
Sewing Machines.	312	Lamp Goods.....	255
Grindstones . .	25	Freezers.....	35
Cutlery.....	873	Brass.....	55
Trunks.....	8	Typewriters.....	90
Electric Material.	1,430	Plated Ware	58
Hardware.....	1,813	Cartridge Shells..	6

GLASGOW.—Total, $255,687.

Machinery	$660	Lead.....	$4,900
Carriages.....	286	Handles Stuff.....	600
Sweepers.....	669	Hardware.....	575
Sewing Machines.	5,095	Belting.....	1,866
Manuftd Wood...	184	Scrap.....	980
Wire Goods.....	53		

GIBRALTAR.—Total, $3,789.

Firearms.....	$130	Machinery.....	$568

GENOA.—Total, $106,013.

Min. Fiber.....	$450	Hardware.....	$421
Rubber Goods ..	3,248	Pumps.....	432
Waste, bales	2,450	Sul. of Copper....	11,778
Organs	383	Machinery.....	300

HAYTI.—Total, $72,518.

Hardware.....	$758	Slates	$168
Manuftd Iron.....	99	Pumps.....	41
Lamp Goods.....	113	Tiles.....	100
Carriages.....	779	Machinery.....	2,046
Electric Material.	134	Rubber Goods....	20
Brushes.....	6	Trunk Matl.....	60
Spikes.....	74	Iron.....	70
Woodware.....	254	Nails.....	324
Cutlery.....	3	Store Trucks.....	6
Tinware	212	Trunks.....	97
Carriage Matl...	96	Scales.....	75
Water Wheel Material.....	56	Carts.....	42
Manuftd Wood...	14	Hose.....	16

HULL.—Total, $287,323.

Machinery.....	$500	Pumps.....	$155
Hardware.....	1,563	Tinware.....	75
Slates.....	10	Woodware.....	50
Agricult. Implts.	85	Manuftd Iron	95
Manuftd Wood...	1,119		

HAVRE.—Total, $293,949.

Manuftd Wood...	$70	Shells.....	$50
Machinery.....	3,078	Aluminum.....	152
Manuftd Iron....	209	Hardware	284
Emery Wheels...	203	Copper.....	70,313
Agricult. Implts.	1,293	Rubber Goods....	250

HAMBURG.—Total, $234,468.

Carriages.....	$400	Firearms.....	$534
Saws.....	45	Hardware	3,172
Manuftd Wood...	644	Die Stocks.....	240
Tinware.....	140	Manuftd Iron....	407
Plated Ware.....	190	India Rubber....	225
Brit. Ware.....	100	Pumps.....	38
Whetstones.....	235	Freezers.....	84
Machinery	9,637	Wringers	412
Sandpaper.....	20	Clocks.....	12

LEITH.—Total, $159,177.

Hardware.....	$725	Iron Drums.....	$30
Agricult. Implts.	570	Manuftd Wood ..	426
Whetstones.....	25		

LOGRONO.

Pumps.....	$14

LONDON.—Total, $936,424.

Cartridges.....	$75	Carriages.....	$542
Woodware.....	1,996	Manuftd Wood...	6,061
Hardware.....	7,792	Wringers.....	93
Machinery.....	2,524	Skewers.....	527
Steel.....	61	Agricult. Implts..	595
India Rubber	4,000	Organ.....	50
Lead.....	4,900	Aluminum.....	2,600
Musical Instruments	184	Clocks.....	2,083
Sandpaper.....	1,084	Lamp Goods.....	180
Firearms.....	263	Watches.....	914
Typewriters.....	450	Watch Cases...	203
Sewing Machines.	2,560	Zinc Skimmer ...	875
Oxide Zinc.....	952	Electric Material.	1,090
Slates	476	Mica.....	63
		Manuftd Iron	522

LIBERIA.—Total, $3,614.

Manuftd Iron	$148	Saws.....	$18
Sewing Machines.	126	Hardware	86
Agricult. Implts..	27		

LIVERPOOL.—Total, $794,084.

Maple Rollers....	$380	Machinery.....	$8,026
Organs.....	5,130	Clocks.....	9,908
Manuftd Wood...	4,112	Cash Register.....	2,000
Electrical Matl..	30	Agricult. Implts.	110
Water Wheel.....	360	Hardware	151
Carriages.....	135	Woodware.....	300
Min. Fiber.....	600	Lamp Goods.....	250
Knife Handles....	463	Shoe Nails.....	75
Old Metal.....	614	Copper Matte.....	43,000

MADEIRA.—Total, $20,407.

Hardware	$80

MEXICO.—Total, $88,667.

Manuftd Wood...	$102	Coal	$310
Sewing Machines.	999	Hardware.....	3,236
Twine.....	50	Manuftd Iron.....	2,947
Woodware.....	10	Lamp Goods.....	290
Agricult. Implts..	763	Clocks.....	25
Gas Cylinders.....	75	Machinery.....	7,120
Sandpaper.....	10	Electrical Goods..	1,256
Windmills.....	73	Brass Goods	110
Pumps.....	626	Cutlery.....	549
Baby Carriage....	24	Nails	163
Belting.....	440	Manuftd Copper.	500
Buoys.....	794	Tinware	46
Firearms.....	1,151	Boiler Tubes.....	506
Organs.....	29	Nails	2
Iron Pipe.....	2,346	Anchors	400
Saws.....	69	Scientific Instr...	38
Scales	188	Iron Bars.....	178
Powder	144	Plumbing Matl...	750
Percussion Caps..	173	Rubber Goods....	975
Carriage Matl....	25	Bicycles	250
Cartridges	283	Iron Safes.....	370
Tacks.....	27	Copper.....	1,175
Stocks and Dies..	54		

MOSCOW.—Total, $5,788.

Scales.....	$5,448	Machinery.....	$252

NOVA SCOTIA.

Coal.....	$560

NEW BRUNSWICK.

Coal.....	$838

NAPLES.—Total, $10,515.

Sulphate Copper.	$2,025	Hardware.....	$435

NEW ZEALAND.—Total, $84,176.

Saws	$47	Sandpaper	$20
Hardware.....	12,594	Cartridge Shells..	90
Axles	188	Velocipedes.....	85
Wringers.....	957	Woodware.....	2,136
Manuftd Wood...	3,480	Brushes.....	220
Slates.....	288	Springs.....	13
Manuftd Iron....	2,657	Lamp Goods.....	2,371
Nails.....	2,327	Carriage Matl....	1,911
Agate Ware.....	41	Thermometers...	43
Clocks.....	1,161	Blocks	19
Pumps.....	216	Store Trucks.....	78
Scales.....	100	Eyelets	35
Car Matl.....	40	Rubber Goods....	277
Ornaments	53	Emery Wheels....	42
Agricult. Implts.	803	Horse Collars.....	70
Windmills	75	Crucibles.....	59
Firearms.....	343	Trunks.....	11
Carts.....	328	Carpet Sweepers..	47
Bird Cages.....	111	Nails.....	65
Razor Strops.....	38	Ship Chandlery...	25
Plated Ware.....	210	Wire Goods.....	16
Sash Cords.....	75	Organs.....	855
Tacks.....	42	Paper Caps.....	70
Cartridges	256	Stone.....	30
Novelties.....	241	Freezers.....	118
Agate Ware.....	10	Skewers	65
Machinery.....	40	Cutlery	935
Sewing Machines.	475	Store Trucks.....	55
Twine.....	5	Carriage	105

PERU.—Total, $26,238.

Bellows.....	$12	Oil Well Supplies	$1,407
Lamp Goods.....	118	Hardware.....	819
Tinware	400	Manuftd Iron.....	863
Scales.....	600	Belting.....	240
Sandpaper	129	Woodware.....	322
Coal.....	262	Machinery	330
Manuftd Copper.	25	Packing	190
Agricult. Implts.	85	Rubber Goods....	830
Emery Cloth.....	250	Cutlery	1,177
Cartridges.....	83	Grindstones.....	18
Machinery.....	190	Manuftd Wood...	200

PORTO RICO.—Total, $25,394.

Carriages	$500	Scales	$67

ROME.

Machinery	$1,000

RIGA.

Pumps	$119

ROTTERDAM.—Total, $259,698.

Organs	$460	Scales	$68
Typewriters	135	Rubber Goods	307
Woodware	112	Agricult. Impits.	949
Copper	27,000	Hardware	327
Carpet Sweepers	40	Whetstones	160
Wringers	100	Ox. Zinc	1,075
Shears	645		

SEVILLE.

Fire Extinguishers	$200

SARATOV.

Pumps	$561

STOCKHOLM.—Total, $4,337.

Steel Balls	$360	Fiberoid	$75

SIAM.—Total, $654.

Sewing Machines	$534

ST. PETERSBURG.—Total, $235.

Agricultural Implements	$210

SAN DOMINGO.—Total, $48,379.

Manuftd Wood	$15	Lamp Goods	$8
Sewing Machines	408	Machinery	6,183
Agricult. Impits	99	Cutlery	171
Scales	56	Tinware	490
Nails	538	Iron	102
Woodware	29	Tacks	5
Buckles	98	Nails	322
Blocks	40	Iron Pipes	5
Brushes	49	Coal	5
Coal	142	Cartridges	1,251
Wheel Tires	100	Typewriters	6
Twine	8	Rubber Goods	17
Hand Trucks	8	Steam Launch	2,500
Axles	8	School Supplies	88
Saws	18	Pumps	706
Tacks	70	Packing	24
Hardware	640	Smokestack	100
Manuftd Iron	519	Locomotive Matl.	85

UNITED STATES OF COLOMBIA.—Total, $21,968.

Hardware	$55	Organ	$46
Manuftd Iron	4,145	Manuftd Wood	49
Lamp Goods	5	Clocks	4
Cutlery	333	Iron Safe	60
Saws	22	Woodware	151
Tinware	58	Typewriters	64
Powder	7	Nails	28
Sewing Machines	28	Fish Lines	21

VENEZUELA.—Total, $134,594.

Hardware	$1,642	Store Truck	$11
Manuftd iron	1,886	Needles	14
Gas Meters	86	Bellows	25
Chandeliers	224	Locomotive	6,200
Nails	23	Manuftd Wood	140
Manuftd Copper	450	Lamp Goods	267
Brit. Ware	2	Gas Cocks	55
Sandpaper	20	Coal	1,028
Wheels and Axles	151	Rubber Goods	127
Scales	648	Spring Balances	276
Woodware	58	Sewing Machines	1,846
Machinery	1,085	Twine	233
Sewing Machine Matl.	21	Brushes	92
Showcases	42	Saws	67
Gold Leaf	29	Cutlery	624
Eyelets	33	Saw Teeth	43
Nails	95	Electric Material	903
Brass Goods	54	Cart	104
Clocks	101	Iron Fountain	162
Springs	15	Surgical Insts	11
Agricult. Impits.	167	Pumps	28
Belting	60	Tacks	211
Plated Ware	184	Wheelbarrows	83
Bird Cages	27	Trunks	84
Slates	10	Tinware	10
		Railroad Material	1,646

VIENNA.—Total, $445.

Manuftd Iron	$150

WARSAW.

Scales	$167

ZURICH.—Total, $1,103.

Typewriters	$438

Biddle Hardware Company's Dinner.

THE NEW YEAR'S DINNER given by the Biddle Hardware Company, Pittsburgh, Pa., to their employees on Thursday evening, January 5, at Boldt's, will long be remembered by the participants as a most enjoyable occasion. The inclemency of weather prevailing at the time did not dampen the ardor nor impair the appetites of those present; and while the storm was raging without the large company seated around the board did ample justice to a feast which might have tempted an epicure.

After the viands had been fully discussed, Chas. M. Biddle in a few well-chosen remarks addressed the "boys" on the mutual relations of employer and employee and the importance of individual effort in promoting the success of the house. The wish expressed by Mr. Biddle that the absence of "spirits" might be compensated for by the high spirits of those present was more than realized.

The hours passed pleasantly in speech and song. James H. Ritter, on whom devolved the arrangement of all details of this merry-making, introduced a number of speakers in a happy vein by referring to some amusing incident in connection with the business life of the individual called upon. Special pride was taken in testifying to the number of years spent in the employ of the house, some having been with them for over a quarter of a century. One good brother, who has but recently come among them, claimed that he should be excused from making a speech on the ground that he was "only six months old," but the claim was not allowed, and he made a good speech.

At a late hour a vote of thanks was tendered the firm, and the guests departed with mutual expressions of good feeling and a determination to carry that feeling through the entire business year.

Personals.

In connection with the dissolution of the old and well-known firm of Quackenbush, Townsend & Co., it may be of interest to those who dealt with them to know that W. H. Townsend of that concern has entered the employ of Sickles, Sweet & Lyon, 35 Barclay street and 40 Park Place, New York, where he will look after the same trade that he did when with the old house. It may be said that Mr. Townsend became a partner in the old establishment about 25 years ago, which previously had been known as Morgan, Quackenbush & Co., their store being at 20 Cortlandt street, where the succeeding firm remained for some time, when they removed to Franklin street, between Broadway and Church street. Remaining there three or four years, they moved down town to Reade street near Broadway, until, having purchased the business and stock of Mulford & Underwood at 85 Chambers and 67 Reade streets, they took possession of that store and have been there ever since. During his long connection with the trade Mr. Townsend has made a host of friends, who express their kindest wishes for his success in his new relations.

George B. Miller, who has been with Wallace & Sons for the past 22 years, lately in charge of their Chicago office, has been placed at the head of their lamp department, with headquarters at 29 Chambers street, New York. This includes lamps and lamp fixtures, tables and art goods. In this connection it may be said T. C. Russell will assume the duties vacated by Mr. Miller, and will be in charge of the Chicago branch.

Frank Haines, who has been for eight years with Hibbard, Spencer, Bartlett & Co., Chicago, is now associated with his father in the S. A. Haines Company, Indianapolis, Ind., and will make his home in the former city.

Ransom Lamb, who has long been associated with the old established house of Quackenbush, Townsend & Co., has lately connected himself with Smith, Lyon & Field, importers and jobbers of hardware and cutlery at 139 Duane and 62–66 Thomas streets, New York. He entered the hardware business as an employee of Sears, Adriance & Platt in 1857, for some years at 165 Greenwich street, subsequently becoming a member of that firm, and their successors, Sears, Leavitt & Co., who were brought out by Quackenbush, Townsend & Co. in 1872. Since that time Mr. Lamb has been with the latter concern and is well and favorably known to the trade.

Frank L. Wilcox, Treasurer of the Berlin Iron Bridge Company, East Berlin, Conn., formerly with the Peck, Stow & Wilcox Company, is a member of the Connecticut Legislature, having been elected in November.

Announcement is made that the business of Ely & Wray, New York, has been consolidated with that of Wiebusch & Hilger, the latter having purchased the stock. G. L. Ely of Ely & Wray has connected himself with Wiebusch & Hilger, and will call upon the trade as usual this season in their interest. It is also stated that in addition to the line of Staniforth goods Wiebusch & Hilger will adopt everything desirable in the line formerly sold by Ely & Wray, and with their assortment of Cutlery of German, English and American make, most of which, it is remarked, is new as to styles, and their well-known assortment of Guns and Hardware, Mr. Ely will thus be able to present to his customers an especially attractive and complete line of goods. The old business of Ely & Wray will be closed up by E. M. Wray at 16 Warren street, New York, to which address all communications to that firm should be addressed as heretofore.

S. A. Haines of the S. A. Haines Company, Indianapolis, was East last week and received a hearty welcome from his many friends.

ALFRED FIELD & Co. inform us that the demand for goods made by Joseph Rodgers & Sons is largely on the increase, and that this unexpected increase in demand taxed their ability to supply the wants of the trade to the utmost all through last fall, but they inform us that they have now made arrangements to fully meet this increased demand. As an instance of this intention they inform us that they received per steamer "Naronic," arriving in New York January 18, a shipment of these goods amounting to nearly $40,000 in value. This, they believe, is the largest shipment ever sent out by Rodgers to this country, and which will be followed by continued large shipments throughout the year.

Forehand New Hammerless Double Gun.

Forehand Arms Company, Worcester, Mass., are offering this gun, as shown in Fig. 1. The working parts, as shown in Fig. 2, are as follows: A, frame; B, barrel; C, fore-end; D, extractor cam; E, safety bolt; F, guard plate; G stock; H, hammer; I, trigger and sear; J, main spring; K, trigger plate; L, hammer pin; M, cocking bolt; N, cocking lever; O, cocking slide; P, cocking lever pin; Q, trigger pin, and R, tang screw. The gun has rebounding locks, and the barrels can be taken off and put on again without cocking the arm, and when cocked the hammers can be let down gradually and without the full force of the blow. These

Fig. 1.—New Hammerless Double Gun.

two features remove the objections of not being able to take off or put on the barrels without cocking the arm and of not being able to let down the hammers without receiving the full force of the blow. The construction of the gun is referred to as simple, there being comparatively few pieces, and the tipping of the barrels and cocking of the gun as very easy. A safety slide is provided, which can be drawn into the rear notch, where it will be inoperative

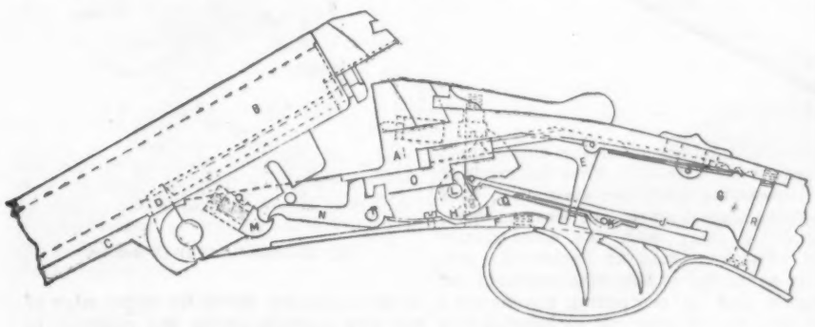


Fig. 3.—Hammerless Gun Opened for Loading.

for trap shooting. The guns are made with fine Damascus barrels, Italian walnut stock, and the material and workmanship, it is stated, are of the very best. The gun is made in three grades, Nos. 1, 2 and 3, the difference consisting in the quality of stock, pattern of checking and the amount of engraving.

Glass-Tube Cutter.

H. A. Rogers, 19 John Street, New York, is introducing the Favorite glass-tube cutter, as here shown, which is an improvement on a similar article brought out some months ago. The tool is 7¼ inches long and $\frac{3}{16}$ inch in diameter. At the end is a small beveled revolving steel wheel on one side of the instrument, and a circular movable gauge with thumb screw. The gauge may be set as far as 5½ inches from the cutting end. In operation, the glass tube is placed on a board or table, the rod inserted and the wheel brought in contact with the glass. By bearing down lightly on the cutter, and at the same time imparting a rotary motion to the tube with the palm of the other hand, the cutter wheel will mark a circle on the inner surface of the tube, when a gentle tap will cause it to part with a clean, smooth fracture.

The Rogers Favorite Glass-Tube Cutter.

The Telegram Pneumatic Tire.

An illustration is given herewith of a new clincher tire, or "quick repairer," which has just been brought out by the Sercombe-Bolte Mfg. Company of Milwaukee, Wis. The rim of this tire is made with a deep channel in the center into which the edges of the outside rubber cover pass so far that on the inflation of the tire every part is firmly clinched, requiring no cement or other fastening. It is exceedingly simple, as shown in the engraving, and at once met with favor at the hands of other bicycle manufacturers, who have placed large contracts for these rims with the Sercombe-Bolte Mfg. Company. The improvement will be appreciated by cyclists who have passed vexatious hours waiting for cement to harden or walked weary miles for the lack of cement after repairing a punctured tire. It was invented by Mr. Bolte of this company.

The Telegram Pneumatic Tire.

The Massie Prison Bed.

Tower & Lyon, 95 Chambers street, New York, are offering this article, made with a woven wire spring and pillow. The pillow is turned down so the bed may close automatically against the wall, affording cleanliness and effectually preventing the heretofore troublesome practice of secreting tools, weapons, &c. The bed has received the approval of high authorities in the criminal service.

The tea plant thrives in Florida and yields three crops a year.

The Coldwell Lawn Mowers.

The Coldwell Lawn Mower Co., Newburg, N. Y., have made several improvements in lawn mowers during the past season. The Imperial mower, Fig. 1, is made in 8 and 10 inch wheels and of the general sizes in width of cut. Two ordinarily weak points, the manufacturers claim, have been made the strongest ones, namely, the ratchet and the adjustment of the knives. The ratchet used in the Imperial is a triple one, Fig. 2, such as is used in horse lawn mowers and heavy roller mowers. It is claimed that the ratchets have been known to wear over 15 years, and in all this time, while many thousands of them have been in use, there is no record of one either breaking or wearing out, which, it is remarked, is an exceptional record. Other features of the ratchet is the almost entire absence of noise, and also that the lost motion practically amounts to nothing. Instead of moving the knife bar to adjust the knives in the Imperial, the knives are adjusted to each other by moving the revolving cutter. The knife bar and side frames are bolted rigidly and permanently together, these with the front rod forming a strong immovable frame. The adjusting is done by means of an ingenious revolving cutter hanger which swings directly in the center of the driving gear and is securely bolted to the side frame by two bolts. The revolving cutter is moved to or from the bed knife by means of two set screws in the end of the hanger, by which the most delicate adjustment of the knives can be made. When the hanger is securely locked between these two set screws it is stated that there is no possibility of the adjustment jarring out of place by being knocked about in boxing and transportation, and that dealers will have no trouble readjusting their mowers when taken out of the cases. The hanger is also arranged so that all the wear can be instantly taken up by turning one screw. This adjustment is referred to as being simple and secure.

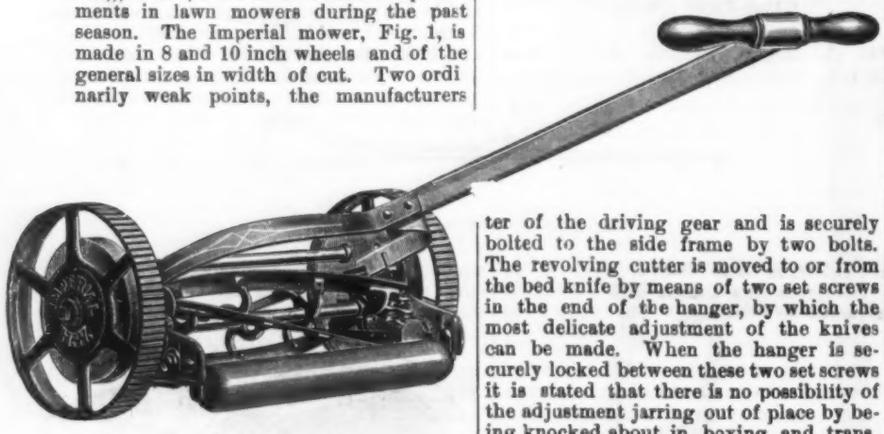


Fig. 1.—High Wheel Imperial Mower.

The arrangement of the driving wheels and gears is also spoken of as a new feature. The drive wheels are independent of the gears and connected to the large gear by the triple ratchet. By this means the ordinary small ratchet and loose pinion on the revolving cutter shaft is done away with, and when the machine is reversed the gears are stationary, thus avoiding a great amount of wear on them, and doing away with the usual clatter and noise when running backward. Another advantage of this arrangement of the gears is that in sharpening the mower a nail or piece of wire can be inserted in a hole in the large gear, and the knives can be reversed without taking off the driving wheels or pinions on reversing the ratchets.

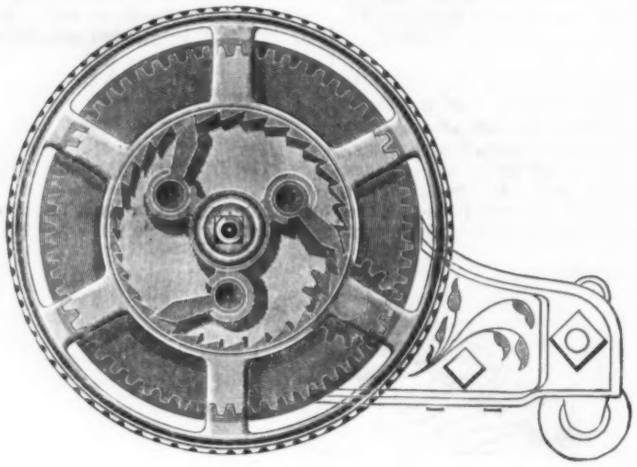


Fig. 2.—Triple Ratchet.

Fig. 3.—New York Mower.

The Imperial has on it also a terrace-cutting arrangement for cutting terraces equally as well as level lawns.

The New York mower, Fig. 3, is designed to meet the demand for a good substantial machine at a medium low price. It has several of their latest improvements in ratchet, back roller hanger, handle adjustment, &c. It is made in medium sizes, 12, 14 and 16 inches, with 7-inch driving wheels. It is adapted for small city plats, especially when the children or a lady does the cutting. It is referred to as light running and as doing excellent work.

Bradley's Odorless Garbage Box.

The garbage box illustrated herewith is put upon the market by A. F. Bradley, 95 South Clark street, room 73, Chicago, Ill. It is designed to be attached inside of a fence, shed or barn, and cleaned from outside, and is made of galvanized steel, in sizes holding from two to six barrels,

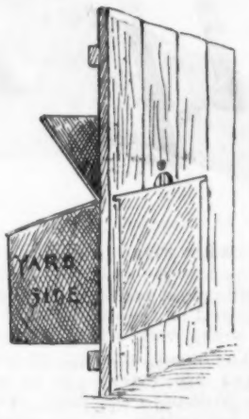


Fig. 1.—Bradley's Odorless Garbage Box.

divided by a partition, so separate receptacles are provided for ashes and garbage. In Fig. 1 is shown a view of the article from the yard side. The cover is hinged to the fence, can be raised as required, and when in position prevents the box from being filled with rain or snow. Underneath the cover is a receptacle for disinfecting powder, so arranged that each time the cover is closed some of the powder is sprinkled on the garbage. There are a number of holes in the bottom near the front for draining off any liquids, and a piece of iron secured to the fence conveys the liquid into the ally. As shown in the engraving the outer upper edge of the box extends above the opening in fence, thus preventing it from tipping over into the yard. The box turns on a rod secured in the bottom, this being fastened at each end to the fence. When it is desired to empty the box it is tipped over, as shown in Fig. 2, when the contents can be removed, after which it is placed in its original position.

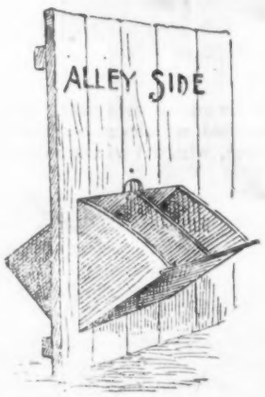


Fig. 2.—Position for Cleaning.

Household Folding Wash Bench.

The American Wringer Company, 99 Chambers street, New York, are introducing the Household folding wash bench,

Fig. 1.—Wash Bench Open.

as illustrated in Figs. 1 and 2. The bench open, Fig. 1, will hold two tubs and a clothes wringer at one time. Any wringer may be placed on the standard and clothes may be wrung from either tub into the other. The board or trough at the top is so arranged that it may be tilted in either direction instantly. By using this bench the tubs are relieved of the strain incidental to wringing and also the injury wrought by the screws in fastening the wringer on the tub. The tubs are free to be emptied at any time, and there is no time lost changing the wringer from one tub to the other. Fig. 2 shows the bench

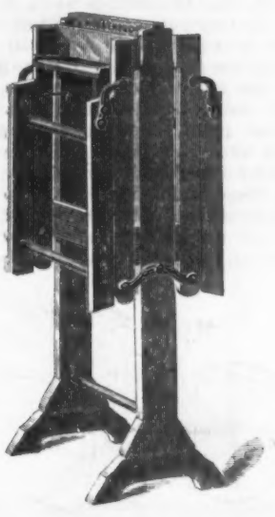


Fig. 2.—Wash Bench Folded.

folded in compact form, to be put away until required. Attention is called to the standards, which permit of its standing upright instead of leaning against something else. The bench is constructed entirely of hard wood.

The Perfect Lawn Rake.

F. E. Kohler & Co., Canton, Ohio, now have ready for market the line of rakes herewith shown. The rakes are made with a hard wood head, in which, it is stated, only the very best pieces are used and will never wear out, and the handles of turned white ash, perfectly dry. The teeth are made of the finest and stiffest spring steel wire and are driven diagonally through the head, and lie almost flat on the ground when in raking position. It is remarked that the rake cannot catch or dig into the ground; that it will take up all dirt or dead leaves, instead of only the stuff lying loosely on the top of the grass, and that on account of its peculiar construction it need only be pushed backward without raising or lowering the handle to clean itself perfectly. The hood is made of No. 22 sheet steel, and is designed for gathering a large load. The socket in which the handle is attached is of the best malleable iron, bolted to the head with two stove bolts, making it possible to leave the sockets off for shipping, thus making a compact crate. The point is made that there is nothing about the rake to break or wear out, and that it is light. The rakes are made in two sizes, 18 and 22 inches, with and without hoods.

Fig. 1.—The Perfect Lawn Rake.

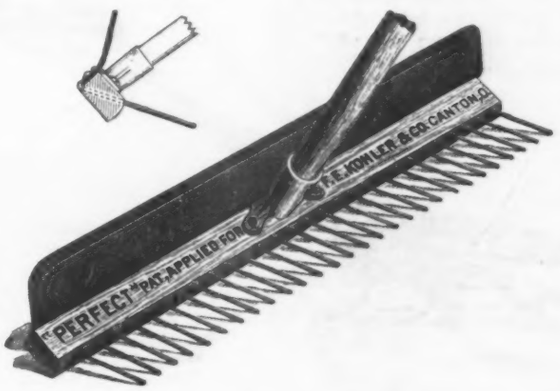


Fig. 2.—Perfect Lawn Rake with Hood.

Champion Roach Trap.

The Specialty Mfg. Company, 69 Beekman street, New York, are offering the Champion catcher, here illustrated. It is designed to catch roaches and water bugs.

Roach and Water Bug Trap.

The base is of wood, 5½ inches square and ⅝-inch thick, covered with a wire dome, through which a wire hook is passed, to be used in connection with a staple fastened to the base, thus joining the two parts, and removable at will. A portion of the base is scooped out, and a round hole ¾ inch in diameter, bored through the wood at an angle, to allow the insects to enter. Over the hole is placed a tapering tube of wire netting, through which the vermin pass. Back of the tube is tacked a thickness of felt in horseshoe shape, which may be baited with water, ale, beer, &c. A small bit of onion, meat, cheese or sugar on the base inside can be added. The bugs may be killed each

morning by dipping the trap inverted in hot water to about half its depth, at the same time giving the base a smart rap to cause the roaches to fall into the water. It is recommended by the makers especially for steamships, bakeries, hotels, restaurants, hospitals, confectioners, kitchens, &c.

Duplex Rat Trap.

The F. J. Meyers Mfg. Company, Covington, Ky., Eastern agent, F. J. Mattison, 69 Beekman street, New York, are introducing the Duplex rat trap, as here shown. It is made of No. 16 iron wire and japanned. The interior space is divided horizontally by a wire floor 4 inches from the bottom. There are two entrances and two trap doors. The bait is placed in the center of the trap in the upper section, and two partitions are so arranged that they may then be raised to an acute angle and fastened by a link on the outside. This permits the rat to see the bait, but prevents him from touching it. On approaching the bait he steps on a cast-iron trap door weighted at the back, which precipitates him into the compartment below and at once automatically resumes its normal position ready for the next one. The bait may be seen from all points either in or out of the trap, but cannot be touched. The trap is made in two sizes, 30 x 11 inches and 24 x 9 inches.

The Duplex Rat Trap.

The Matthews Garden Drill.

Ames' Plow Company, Boston, and 53 Beekman street, New York, are putting on the market the Matthews Garden Drill, with new universal cultivating attachments, as illustrated herewith. It is constructed, in the seeding parts, on the lines of the genuine Matthews garden drill, which includes a round seed box and seed dial, also an indicator on which the names of the seeds to be planted are given. It is so arranged that the indicator is turned around until the name of the kind of seed to be planted comes to the indicator pin at the top. A simple arrangement has been added whereby any of the holes in the drill can be gauged to a nicety, so that no seed need be wasted by being sown too thickly. There is also a seed cut-off to check the flow of seed while turning at the ends of the rows. The attachments shown include five cultivator teeth, two hoes and two plows, and can readily be put into the frame when the seed conductor and coverer are removed. A prominent feature of the implement is referred to as being the combination of a full-sized seed sower with cultivating attachments.

Attachments for the Matthews Garden Drill.

The Matthews Garden Drill.

The Harper Combined Ventilator.

Harper Mfg. Company, Peoria, Ill., are offering the combined thimble, flue stopper, collar and ventilator, as shown here with. It consists of a cast-iron thimble and outside rim plate, also a hinged plate on which is a flue stopper and register.

The Harper Combined Ventilator.

The thimble is placed in the chimney, when the face plate is fastened to the thimble by two small screw bolts. There are two small raised parts on the rim plate through which are holes for wiring the stove pipe. When the stove pipe is inserted the flue stop and register plate is raised and rests on the top of the stove pipe. When the pipe is taken down this plate is shut down, as shown in the cut, and fastened with the pin. The hole in the thimble near the inner end is for an anchor pin, which is placed from the inside of the thimble to secure it in the chimney. The front of the article is well finished in Japanese or sixteenth century style. The manufacturers claim for the device that it can be securely anchored into the chimney; that it is positive protection from fires caused by flues burning out; that it has a stationary and ornamental pipe collar; that the flue stopper is positively tight and soot proof; that it provides for wiring the stove pipe and does away with the necessity of defacing the walls with nails, and that the thimble is so constructed and placed in the chimney that the stove pipe will not push into the flue so far as to cut off the draft.

Union Bicycles.

Union Cycle Mfg. Company, 166–170 Columbus avenue, Boston, are putting the machines herewith illustrated on the market for 1893. The Union P. D. Q., Fig. 1, has Humber frame, a 43-inch wheel base, 28-inch wheels, spokes nickeled through entire length, and forged steel hubs having the bearing case pressed into the hubs and dust proof. It is provided with Abingdon chain, detachable rear sprocket, 6¼-inch round cranks, and rubber or rat-trap pedals. The handle bar is double curved, having a spread of 24 inches at the grips, with cork or vulcanite grips; the steering head revolving on 46 $\frac{3}{16}$-inch balls, with the crank axle bearing dust proof, and the bearing cases pressed into the barrel. The machine stripped for road racing weighs 32 pounds, and is geared from 53 to 63 inches. All nickeling is done on a heavy coat of copper. The nuts, screws and keys are made of specially selected steel. Either Gar-

Fig. 1.—Union P. D. Q.

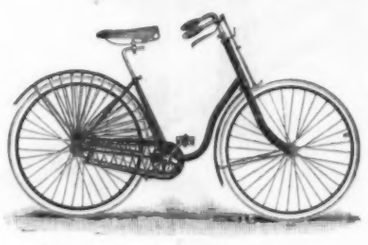


Fig. 2.—Union No. 3.

ford, Union or Solid Comfort saddles are furnished. The Union No. 3, as shown in Fig. 2, has a single tube loop frame, 28-inch wheels, air-tight tires, round 6-inch cranks, special pedals 3½ inches in breadth, dress and chain guard artistically laced with braided elastic cord. The cycle is geared from 46 to 56 inches, with specially curved handle bar having a 24-inch spread at the grips; cork or vulcanite grips, front brake, weight all on 38 pounds. All parts not mentioned in the description, are the same as on the Union P. D. Q. machine.

Pneumatic Tire Pump.

Raymond Bicycle Company, Boston, Mass., are introducing for 1893 an air pump contained in and a part of a bicycle, as illustrated herewith. The pump is in the upright tube which contains the seat post, the post being lengthened by the addition of an aluminum tube. On the end of the extended tube are two leather washers, which fit the upright tube which contains the seat post. There is a valve at the bottom of the seat post tube to which may be connected a small piece of rubber tubing, the other end of which is connected to the valve in the tire. The screw which holds the seat post has only to be loosened, when the pump is ready for use, and with a few strokes a tire is easily and quickly filled. The manufacturers claim that the pump is a most powerful one, that it is simple in construction, that it adds no more weight to the wheel, and that it is always in place at the time needed.

Pneumatic Tire Pump.

Planet, Jr., Garden Seed Drill.

S. L. Allen & Co., Philadelphia, have perfected the seed drill illustrated herewith. The drill opens, sows, covers, rolls down and marks the next row, all at one operation. The hopper holds 2 quarts of seed and the drill is adapted to all conditions of land, working especially well in fresh ground or when planting on a ridge, as it has two 15-inch driving wheels placed 6 inches apart. The drill has a force feed; a peculiarly formed rubber double screw, working directly over a diamond-shaped hole in the bottom of the hopper, discharges the seed in a regular manner, whether the hopper is full or contains only a single paper of seed, thus insuring even sowing. By means of a rod connecting the seed dial with the discharge opening the drill is set for sowing different seeds. The flow of seed is stopped instantly by a single movement of the forefinger without taking the hand from the handle, and a reverse movement opens the drill again, so that, it is stated, not a single hill need be missed at starting or lost at stopping. The machine will sow a continuous row with regularity, but the distinguishing feature is that it will drop neatly in hills either 4, 6, 8, 12 or 24 inches apart. A special plow is supplied for sowing onion seed for sets, which opens three shallow furrows side by side, making a band of plants about 4 inches wide.

Planet, Jr., Garden Seed Drill.

Auger Mortise Pulleys.

Shepard Hardware Company, Buffalo, N. Y., are offering the trade sash pulleys as shown in Figs. 1 and 2. They are made with wheels drilled and polished, steel axles and marking points on the sides. These fit the same mortise as the Empire and Common Sense pulleys. The pulleys shown in the cuts are made in 1¾ and 2 inch.

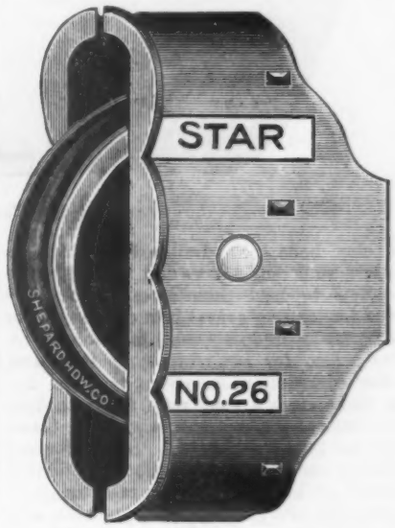


Fig. 1.—Star Mortise Pulley.

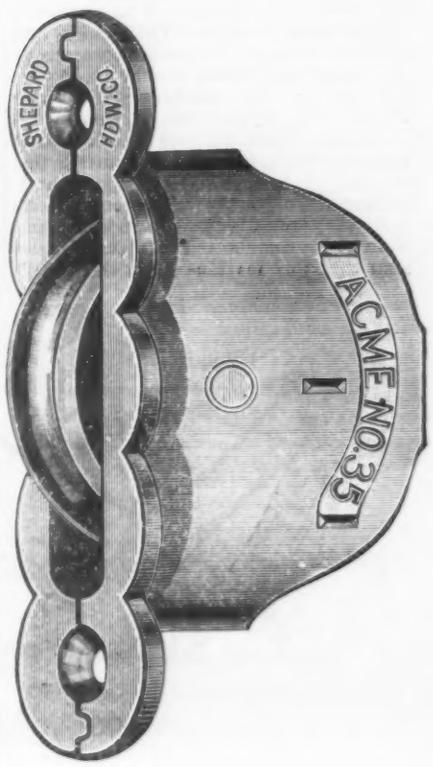


Fig. 2.—Acme Mortise Pulley.

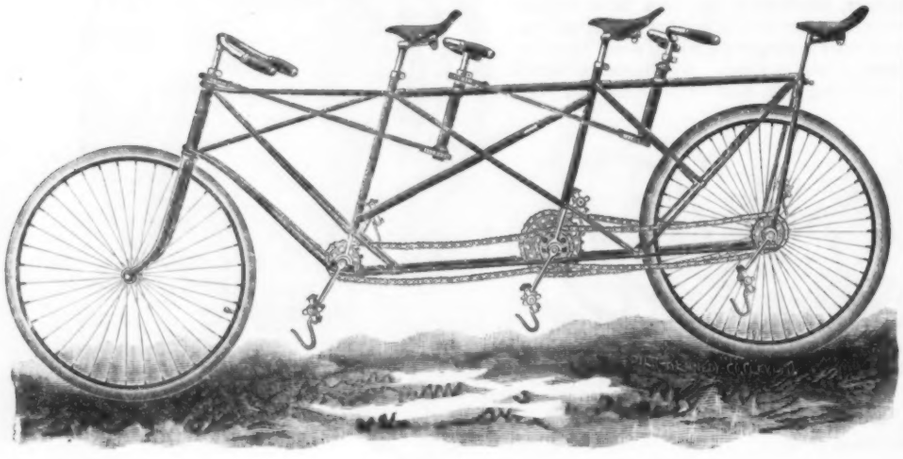
Gravel Digger Elevator Bucket.

The accompanying cut represents a Salem elevator bucket, manufactured by W. J. Clark & Co., Salem, Ohio. It is made of an extraordinary heavy gauge of steel, provided with a digger. When a line of these buckets are dragged in gravel, sand or clay beds, the designed result is to loosen such substances and to enable the buckets to load themselves. They are used for loading gravel into cars by means of portable dredging machines for use on land; also for removing sand bars and other obstructions in rivers, harbors, &c. In some cases a steel rake for grappling boulders and snags too large to be taken into the buckets are used. Both rake and buckets are attached to the same double strand of heavy chain, one rake being allowed to every five or more buckets, and all made strong enough to withstand any strain they may be subjected to when encountering immovable substances.

Gravel Digger Elevator Bucket.

The Winton Triplet.

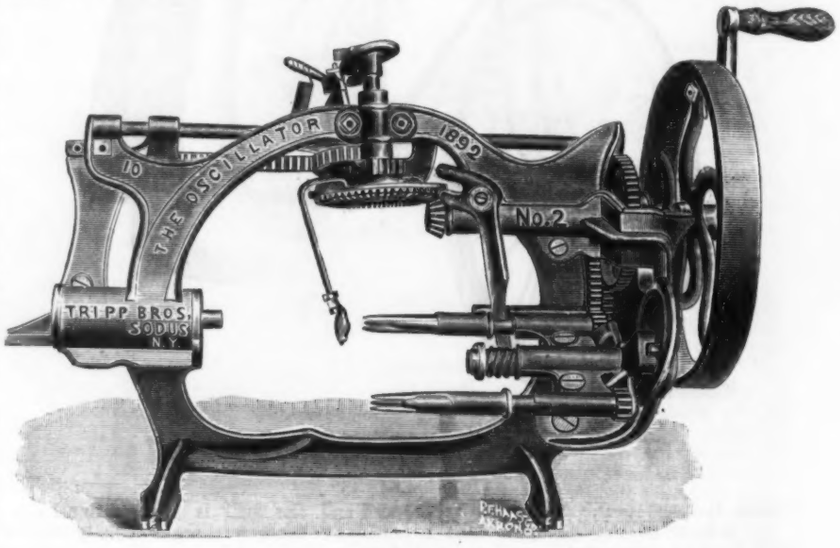
The Winton Bicycle Company, Cleveland, Ohio, have brought out this machine, as illustrated herewith. The frame is very strongly braced to prevent any swaying at the crank axle, which would greatly retard speed. The machine has 30-inch wheels, with 1¾-inch tire on front wheel and 2-inch tire on the rear wheel. It has a 6½-foot wheel base and measures 9 feet over all. It is provided with special anti friction chain gearing and sprocket steering arrangement, geared to 80 inches and weighs 75 pounds. The manufacturers state that this machine holds the world's triplet records to date and that it is entirely new in American manufacture, being the first of home production on the market.



The Winton Triplet.

The Oscillator No. 2.

The accompanying cut represents a power apple parer and corer, put on the market by Tripp Bros., Sodus, N. Y. The wheel to which the crank is attached is also adapted for the use of a belt, and by the addition of a friction clutch and lever it is made ready for power use. The forks are operated and held in position by a simple yet ingenious plan, and paring as they do two apples at the same time, make the machine almost equal in capacity, it it is stated, to two one fork machines. The capacity of the machine is from 30 to 38 apples per minute. Three turns of the wheel are required to pare and core an apple. The point is made that the skins, cores and fruit are all separated, and that on reasonably fair fruit the machine will remove every particle of peeling and core. The machine has bearings lined with brass, the mechanism for operating the parts is simple and the entire construction of the machine is such as to secure strength and durability. It is particularly designed to prepare apples for evaporating. The above firm continue to manufacture the No. 1 Oscillator, which is a one fork parer and corer, in which the same mechanical principles are embodied as in the No. 2.



The Oscillator No. 2.

The Fletcher Fire Mat.

The Fletcher Fire Mat Company, Cincinnati, Ohio, are putting on the market what they call their fire mat, an illustration of which is shown herewith. The mat is made of indestructible material and bound in metal and is said to be serviceable in many ways about a kitchen. It is recommended for use on a stove to prevent the burning of foods while cooking, as by putting the mat under the utensil the heat is tempered. It also prevents tea and coffee from boiling over. The mat can be used on a grate fire, gas, gasoline, oil, coke, coal or coal range. For use in the laundry it is noted that it prevents the irons from being soiled by coming in contact with the flame. Also that the irons retain their heat for a greater length of time when these mats are used for a stand.

The Fletcher Fire Mat (Patented).

If the mat become dirty it is cleaned by putting in the flame.

The river at Cincinnati was blocked with ice last week, for the first time in 12 years, and for the first time in over 40 years the Ottawa River is frozen solid right up to the falls

Current Hardware Prices.

JANUARY 18, 1893.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobber, at the figures named.

The character @ is used to indicate a range of price; thus discount 50&10@50&10&5 % signifies that the goods in question are sold at prices ranging from discount 50 and 10 % to discount 50 and 10 and 5 %.

Adjusters, Blind—

Domestic.....₱ doz $3.00, 33⅓%
Excelsior....₱ doz $10.00.....50&10&2%
North's.....list net @ 10%
Zimmerman's—See Fasteners Blind.

Ammunition—See *Caps, Cartridges, Shells, &c*

Anvils—

Eagle Anvils, ₱ ℔ 9¢..... 15@15&5%
Peter Wright's.....11@11½%
Armitage's Mouse Hole.....10½@11¢
Am. Wrought, Horse shoe brand.11@11½¢
Trenton.....10@10½¢
Wilkinson's.....10½@11¢
Moore & Barnes Mfg. Co.....33⅓%

Anvil Vise and Drill—

Millers Falls Co., $18.00.....20%
Cheney Anvil and Vise.....25%
Allen Anvil and Vise. $3.00.....40&10%
Star.....45&5%

Apple Parers—See *Parers, Apple, &c.*

Augers and Bits—

Douglass Mfg. Co.
Wm. A. Ives & Co.
Humphreysville Mfg. Co.
French, Swift & Co. (F. H. Beecher)
P. S. & W. Co.
Rockford Bit Company.....75%
Cook's, Douglass Mfg. Co.....55%
Cook's, N. H. Copper Co.....60%
Ives' Circular Lip.....60%
Patent Solid Head.....30%
C. E. Jennings & Co., No. 10, extension lip.....40%
C. E. Jennings & Co., No. 30.....60%
C. E. Jennings & Co., Auger Bits, ₱ set, 32½ quarters, No. 5, $5; No. 30, $3.50.25%
Lewis' Patent Single twist.....45%
Russell Jennings' Augers and Bits.25&10%
Imitation Jennings' Bits.....60@60&10%
Pugh's Black.....20%
Pugh's Jennings Pattern.....30%
Car Bits.....60@60&10
Car Bits, P. S. & W. Co.....60&10
Snell's Car Bits.....60%
L'Hommedieu Car Bits.....15&10%
Forstner Pat. Auger Bits.....20%
Cincinnati Bell-Hangers' Bits.....30&10

Bit Stock Drills—

Morse Twist Drills.....50&10&5%
Standard.....50&10&5%
Cleveland.....50&10&5%
Syracuse, for metal.....50&10%
Syracuse, for wood (wood list).30@30&5%
Cincinnati, for wood.....30&10%
Cincinnati, for metal.....45&10%

Expansive Bits—

Clark's small, $18; large, $26..35@35&10%
Ives' No. 4, ₱ doz. $60.....40%
Swan's.....40%
Steer's, No. 1, $36; No. 2, $23.....35%
Stearns' No. 2, $48.....20%

Gimlet Bits—

Common.....₱ gross $2.75@$3.25
Diamond.....₱ doz $1.25....40&10%
Bee.....25@25&5%
Double Cut, Shepardson's.....45@45&10%
Double Cut, Ct. Valley Mfg. Co.....30&10%
Double Cut, Hartwell's, ₱ gro., $5.00..25%
Double Cut, Douglass'.....40&10%
Double Cut, Ives.....60@60&10%

Hollow Augers—

Ives'
French, Swift & Co.
Douglass'.....33⅓@33⅓ & 10%
Bonney's Adjustable, ₱ doz $48.....50%
Stearns'.....20&10%
Ives' Expansive, each $4.50.....50&5%
Universal Expansive, each $4.50.....20%
Wood's.....25@25&10%
Cincinnati Adjustable.....25&10%
Cincinnati Standard.....25&10%

Ship Augers and Bits—

L'Hommedieu's.....15&10@15&10&5%
Watrous'.....25@25&10%
Snell's.....15&10@15&10&5%
Snell's Ship Auger Patt'n Car Bits, 15&10@15&10&5%

Awl Hafts—See *Hafts, Awl.*

Awls—

Awls, Sewing, Common....₱ gr. 85¢@90¢
Awls, Should. Peg.....₱ gr. $1.50@$1.55
Awls, Pat. Peg.....₱ gr. 35¢@38¢
Awls, Shouldered Brad..₱ gr. $1.30@ 1.40
Awls, Handled Brad....₱ gr. $2.50@$3.00
Awls, Handled Scratch..₱ gr. $4.00@4.50
Awls, Socket Scratch..₱ doz. $1.10@$1.20

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—

	Plain.	Beveled.
First quality, best brands	$7.00	$7.50
First qual., other brands	6.50 @ 6.75	7.00
Second quality	5.50	6.00

Axle Grease—See *Grease, Axle.*

Axles—

No. 1....3¼@4¼¢, No. 2, 5¢@6¢
Nos. 7 to 14.....60&10%
Nos. 15 to 18.....47½%
Nos. 19 to 22.....70%
Concord Axles, loose collar.....4½@6¢
Concord Axles, solid collar.....5½@7¢
National Tubular Self Oiling.....33⅓@33⅓&5%
8% cash

Bag Holders—See *Holders.*

Balances—

Spring Balances.....40%

	No. 2000	20	30
Chatillon, ₱ doz.	$0.80	0.95	1.75 net

Chatillon Straight Balances.....40%
Chatillon Circular Balances.....50&10%

Barb Wire.—See *Wire, Barb.*

Bars—

Crow—

Cast Steel.....₱ ℔ 3½¢
Iron, Steel Points.....₱ ℔ 3¢

Basins, Wash—

Standard Fiberware, No. 1, 10¼ inch, $2; 12-inch, $2.25 13¼-inch, $2.75; 15-inch, $3.25.

Beams, Scale—

Scale Beams, List Jan. 12, '82..50&10@50&10&5%
Chatillon's No. 1.....40%
Chatillon's No. 2.....50%
Custer's.....33⅓%

Beaters—

Egg—

Dover.....₱ doz $1.20@$2.50
Duplex (Standard Co.).....₱ doz $1.25
Rival (Standard Co.).....₱ doz $1.00
Duplex Extra Heavy (Standard Co.)....₱ doz. $2.50
Bryant's.....₱ gross $14.00
Double (H. & R. Mfg. Co.), ₱ gro., No. 0 $12.00; No. 1, $15.00; No. 2.....$36.00
Easy (H. & R. Mfg. Co.).....₱ gro $12.00
Triple (H. & R. Mfg. Co.).....₱ gro $16.50
Spiral.....₱ gro $4.25 @ $4.50
Improved Acme (H. & R. Mfg. Co.)....₱ gro. $9.00
Paine, Diehl & Co.'s .....₱ gro. $24.00
Silver & Co.....₱ doz $5.50

Culinary—

Keystone, P. D. & Co., Each, No. 1, $1; No. 2, $2.....20%

Bells—

Cow—

Common Wrought.....60&10%
Western, Sargent's list.....70&10%
Kentucky, "Star".....20&10%
Kentucky, Sargent's list.....70&10%
Kentucky Durham.....70&10%
Dodge, Genuine Kentucky.....70@70&10%
Texas Star.....50&10@50&10&5%

Door—

Gong, Abbe's.....33⅓&10%
Gong, Yankee.....45&10%
Gong, Barton's.....40&10@50%
Crank, Taylor's.....25&10%
Crank, Brooks'.....50&10&2%
Crank, Cone's.....10%
Crank, Connel's.....20&10%
Lever, Sargent's.....60&10%
Lever, Taylor's Bronzed or Plated....net
Lever, Taylor's Japanned.....25&10%
Lever, R. & E. Mfg. Co.'s.....50&10&2%
Pull, Brook's.....50&10&2%

Electric—

Wollensak's.....20%
Bigelow & Dowse.....20%
Taylor's.....20%

Hand—

Light Brass.....70&10@70&10&5%
Extra Heavy.....70%
White.....70%
Silver Chime.....33⅓&10%
Globe Cone's Patent).....25&10@35%

Miscellaneous—

Call.....45@50%
Farm Bells.....₱ ℔ 3¢&3½¢
Steel Alloy Church and School Bells..40%

Bellows—

Blacksmiths'.....60&10@60&10&5%
Molders'.....40&10@50%
Hand Bellows.....40&10@50%

Belting, Rubber—

Common Standard.....70@10@75&5%
Standard.....70&5@70&10%
Extra.....60&10@60&10&5%
N.Y.B.&P. Co., Carbon.....60%
N.Y.B.&P.Co., Diamond.....50%
N.Y.B.&P.Co., Para.....40%

Bench Stops—See *Stops, Bench*

Benders and Upsetters, Tire—

Stoddard's Lightning Tire Upsetters..15%
Detroit Perfected Tire Bender.....15%
Green River Tire Benders and Upsetters.....20%

Bits—

Auger, Gimlet, Bit Stock Drills, &c., see *Augers and Bits.*

Bit Holders—See *Holders.*

Blind Adjusters—See *Adjusters, Blind*

Blind Fasteners—See *Fasteners, Blind.*

Blind Staples—See *Staples, Blind.*

Blocks—

Cleveland Block Co., Mal. Iron.50@50&10%
Moore's Novelty, Mal. Iron.....50%
Sur Grip Steel Tackle Blocks.....25%

Bolts—

Carriage, Machine, &c.—

Com. list June 10, '84.....75&10&5@80%
Genuine Eagle, Norway, list Oct. '84....80&5@80&10%
Eagle, Norway, list Oct. '84 80&10@80&15
Phila. pattern, list Oct. 7, '84..... 80%
R.B.&W., old list.....70%
Machine, list Jan. 1, 1890.....80&10%
Bolt Ends, list Jan. 1, 1890.....80&10%

Door and Shutter—

Cast Iron Barrel, Square, &c.....70&10%
Cast Iron Shutter Bolts.....70&10%
Cast Iron Chain (Sargent's list)....65&10%
Ives' Patent Door Bolts..60&10@60&10&5%
Wrought Barrel.....70@70&10%
Wrought Square.....70@70&10%
Wr't Shutter, all Iron, Stanley's...60&10%
Wr't Shutter, Brass Knob.....40&10%
Wr't Shutter, Sargent's list.....60&10%
Wr't Sunk Flush, Sargent's list....60&10%
Wr't Sunk Flush, Stanley's list....50&10%
Wr't B. K.Flush, Co' mr.....55&10%

Stove and Plow—

Stove.....60&10@60&10&5%
Plow.....60&10&50@60&10&10%
R. B. & W., Plow.....55%

Tire—

Common, list Feb. 28, '83.....65@65&5%
Port Chester Bolt and Nut Company:
Empire list Feb. 28, '83.....65%
Keystone, Philadel., list Oct. '84.....80%
Norway, Phila., list Oct. '84.....75%
American Screw Company'
Norway, Phila., list Oct. 16, '84.....75%
Eagle, Phila., list Oct. 16, '84.....80%
Philadel., list Oct. 16, '84 .....80%
Bay State, list Feb. 28, '83.....65%
R. B. & W., Philadel., list Oct. 16, '84...80%

Borers, Tap—

Common and Ring.....20&10%
Ives' Tap Borers.....33⅓&5%
Enterprise Mfg. Co.....20&10@30%
Clark's.....33⅓@35%

Borax—

Per ℔.....9½@10½¢

Boring Machines—See *Machines, Boring.*

Bow Pins—See *Pins, Bow.*

Boxes, Wagon—

Per ℔.....2¾¢

Braces—

American Bit Brace and Tool Co.,
Nos. 10, 12, 20.....60&10%
Nos. 11, 21, 24, 27.....70&10%
Nos. 22, 23, 25.....60&10&5%
Nos. 13, 26, 36, 37 .....70&10&5
Amidon's,
Barker's Imp'd Plain.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet.....75&10@80%
Eclipse Ratchet.....60%
Globe Jawed.....40@40&10%
Corner Brace.....40@40&10%
Universal, 8 in., $2.10; 10 in.....$2.25
Buffalo Ball.....$1.10@$1.15
Barber's,
Nos. 10 to 16.....50&10%
Nos. 30 to 33.....50&10%
Nos. 40 to 63.....50&10@50&10&10%
Saxton's,
Barker's Imp. Polished.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet, Polished.....50&10@60%
Ratchet, Nickeled.....40&10@50%
Buffalo Ball.....net, $1.10@$1.15
Bartholomew's,
Nos. 25, 27 and 30.....50&10@60&5%
Nos. 117, 118, 119.....70@70&5%
Common Ball, American.....$1.00@$1.10
Fray's Genuine Spofford s...50&5@50&10%
Fray's Nos. 70 to 120, 81 to 123, 207 to 414 .....50&10%
Ives' New Haven Novelty.....70@70&5%
New Haven Ratchet.....60&5@60&10%
Barber Ratchet.....60&5@60&10%
Barber's.....60&5%
Spofford.....60&5@60&10%
Osgood's Ratchet.....40&10@50%
P. S. & W. Co., Peck's Patent.....60%

Brackets—

Shelf, plain,
Regular, list.....65@70%
Sargent's list.....60&10@70&10%
Shelf, fancy,
Sargent's list.....70@70&10%
Other makes at a wide range of prices.

Bright Wire Goods—See *Wire.*

Broilers—

Henis' Self-Basting. { Inch..... 9 10 9x11
{ Per doz...$4.50 5.50 6.50
New Haven.....50%
Wire Goods Co.....65&10%
Morgan Odorless.....₱ doz. $12, 5%

Buckets, Well—

Galvanized—

Hill's.....₱ doz. 12 qt. $4.25; 14 qt. $5.25
Iron Clad.....₱ doz. 14 qt. $4.25@4.50
Helwig's Flat Iron Band.....$3.75
Helwig's Wired Top.....₱ doz $4.00

Bull Rings—See *Rings, Bull.*

Butcher's Cleavers—See *Cleavers, Butchers'.*

Butts—

Brass—

Wrought Brass.....80@80&10%
Cast Brass, Tiebout's.....50%
Cast Brass, Fast.....33⅓&10%
Cast Brass, Loose Joint.....33⅓&10%

Cast Iron—

Fast Joint, Narrow.....50&10&5@60%
Fast Joint, Broad.....50&10@60%
Loose Joint.
Loose Joint, Japanned.
Loose Joint, Jap. with Acorns.
Parliament Butts.
Mayer's Hinges.
Loose Pin, Acorns.
Loose Pin, Acorns, Japanned...
Loose Pin, Acorns, Japanned, Plated Tips.. 75@75 & 10%

Wrought Steel—

Fast Joint, Narrow.
Fast Joint, Lt. Narrow.
Fast Joint, Broad.
Loose Joint, Broad.
Table Butts, Back Flaps, &c.
Inside Blind, Regular.
Indide Blind, Light.
Loose Pin.
Bronzed Wrought Butts. List Jan. 2 1893, 40@40&10% 50@50&10%

Calipers—See *Compasses.*

Calks, Toe—

Gautier, One Prong, Blunt.....5½@6¢
Burke's One Prong, Blunt.....5½@6¢
Burke's, Two Prong, Blunt.....7½@8¢
Burke's, One Prong, Sharp.....6½@7¢

Can Openers—See *Openers, Can.*

Caps—

Percussion—

Hicks & Goldmark's and Union Metallic Cartridge Co.....₱ 100
F. L. Waterproof, 1-10's.....35@37¢
E. B. Trimmed Edge, 1-10's.....47@50¢
E. B. Grnd. Edge, Cent. Fire, 1-10's.....47@50¢
Musket, Waterproof, 1-10's.....50@53¢
G. D.....27@30¢
S. B. Genuine Imported.....45¢
Eley's E. B.....56@58¢
Eley's D Waterproof, Central Fire..$1.60

Primers—

Berdan Primers, $1.00.....2%
B. L. Caps (Sturtevant Shells) $1.00....2%
All other Primers, $1.20.....2%

Cards—

Watson's Cotton, Wool, Horse and File, list January 28, 1891.....25%

Carpet Stretchers—See *Stretchers, Carpet.*

Carpet Sweepers—See *Sweepers, Carpet.*

Cartridges—

Rim Fire Cartridges.....50&5&2%
Rim Fire Military.....15&2%
Cent. Fire, Pistol and Rifle.....25&5&2%
Cent. Fire, Military and Sporting .....15&5&2%
Blank Cartridges, except 22 and 32 cal., additional 10% to above discounts.
Blank Cartridges, 22 cal., $1.75.....2%
Blank Cartridges, 32 cal., $3.50.....2%
Primed Shells and Bullets.....15&5&2%
B. B. Caps, Round Ball, $1.75.....2%
B. B. Caps, Con. Ball, Swgd., $2.00.....2%

Casters—

Bed.....
Plate.....
Shallow Socket...
Deep Socket.....40&10%
Yale Casters, low list.....45%
Yale, Gem.....70%
Martin's Patent (Phœnix).45&10@50&10%
Payson's Anti-friction.....70@70&10%
Payson's Truck.....60@60&10%
Giant Truck Casters.....35%
Stationary Truck Casters.....60&10%
Socket Truck Casters.....50@50&10%
Gwinner's Common Sense.....50%
Gwinner's Hercules.....50%
Brass.....55@55&10%
Others.....60@60&10%

Cattle Leaders—See *Leaders, Cattle.*

Cement—

Victor Elastic.....5 ℔ pails ₱ ℔ 5¢

Chain—

Trace, Wagon and Fancy Chains, List revised Oct. 15, 1892..60@60&10%
American Coil, in cask lots,

3-16	¼	5-16	⅜	7-16	½	⅝	¾
$7.50	5.50	4.45	3.80	3.65	3.50	3.40	3.35

Less than cask lots, add ½¢@1¢ ₱ ℔
German Coil, list July 12, 1892.60@60&10%
German Halter Chain, list July 12, 1892. 60@60&10%
Covert Halter.....60&2%
Covert Traces.....35&2%
Covert Heel Chain.....50&2%
Oneida Halter Chain.....60@60&5%
Galvanized Pump Chain.....₱ ℔ 5½@6¢
Jack Chain, Iron.....80&10%
Jack Chain, Brass.....80%

Chalk—

White, case lots. ₱ gr 50¢; small lots. 52¢
Red, case lots....₱ gr 67¢ small lots. 72¢
Blue, case lots....₱ gr 75¢; small lots 80¢
See also Crayons

Chalk Lines—See *Lines.*

Chisels—

Socket Framing and Firmer

P. S. & W.
New Haven.
Witherby,
Mix.
Ohio Tool Co. } .75&10@75&10&5%

Douglass.....75@75&5%
Buck Bros.....30%
Merrill.....60&10@60&10&5%
L. & I. J. White.....30@30&5%

Tanged and Miscellaneous.

Tanged Firmers.....40&10@50%
Butchers'.....$4.75@$5.00
Spear & Jackson's.....$5 to £
Buck Bros.....30%
Cold Chisels, ₩ ℔.....15@16¢

Chucks—

Beach Pat.....each, $8.00.....20%
Morse's Adjustable, each, $7.00,20@20&5%
Danbury.....each, $6.00,30@30&5%
Syracuse, Balz Pat.....25%
Graham Patent.....33⅓%
Skinner's Patent Chucks.
Combination Lathe Chucks.....33⅓%
Universal Lathe Chucks.....40%
Independent Lathe Chucks.....40%
Drill Chucks.....15%
Union Mfg. Co.
Victor.....$8.50, 25%
Combination.....40%
Universal.....40%
Independent.....40%

Churns—

Tiffin Union, each, 5 gal. $3.25; 7 gal., $3.75; 10 gal., $4.25.
McDermaid Star Barrel Churn, each 6 gal., $2.60; 10 gal., $2.75; 15 gal., $3.00; 20 gal., $3.25.

Clamps—

R. I. Tool Co.'s Wrought Iron.....25%
Adjustable, Cincinnati.....15&10%
Adjustable, Hammers.....15@15&5%
Adjustable, Stearn's.....30@30&10%
Stearn's Adjustable Cabinet and Corner.....30@30&10%
Cabinet, Sargent's.....70&10%
Carriage Makers', sargent's...75@75&5%
Carriage Makers', P., S. & W Co...40&10%
Eberhard Mfg. Co.....40&5@40&10%
Warner's.....40&10@40&10&5%
Saw Clamps, see Vises, Saw Filers'.
Carpenter's, Cincinnati.....25&10%

Cleavers, Butchers'—

Bradley's.....25@30%
L. & I. J. White.....20&5%
Beatty's.....40@40&5%
New Haven Edge Tool Co.'s.....40%
P., S. & W.....33⅓&5@33⅓&10%
Foster Bros.....30%
Schulte, Lohoff & Co.....40@40&5%

Clips—

Norway, Axle, ¼ & 5-16.....55&5&5%
2d grade Norway Axle, ¼ & 5-16....65&5%
Superior Axle Clips.....60%&5&70%
Norway Spring Bar Clips, 5-16...50&5&5%
Wrought Iron Felloe Clips.....₩ ℔, 5½¢
Steel Felloe Clips.....₩ ℔, 5¢
Baker Axle Clips.....25%

Cloth and Netting, Wire—See *Wire, &c.*

Cockeyes.....50%

Cocks Brass—

Hardware list.....60@2%

Coffee Mills—See *Mills, Coffee.*

Collars, Dog—

Chapman Mfg. Company.....50&10@60%
Medford Fancy Goods Co.....40&10@50%
Embossed, Gilt, Pope & Steven's list, 30&10%
Leather, Pope & Steven's list.....40%
Brass, Pope & Steven's list.....40%

Combs, Curry—

Fitch's.....50&10@50&10&10%
Rubber, per doz., $10.00.....25%
American Curry Comb Co. .....33⅓@40%
Kohler's Magic Oscillating. ₩ doz., $2.00
Kohler's Humane.....₩ doz., $1.75

Compasses, Dividers, &c.

Compasses, Calipers, Dividers.70@70&10%
Bemis & Call Co.'s
Dividers.....65%
Compasses.....50&5%
Calipers, Wing and Inside or Outside, 50&5%
Calipers, Double.....60%
Calipers, Call's Patent Inside.....30%
Excelsior.....50%
J. Stevens & Co.'s.....35&10%
Starrett's
Spring Calipers and Dividers....25&10%
Lock Calipers and Dividers.....25%
Combination Dividers.....25%

Coopers' Tools—See *Tools, Coopers'.*

Cord—

Sash—

Common.....₩ ℔, 10@11¢
Patent, good quality.....₩ ℔, 12@12½¢
White Cotton Braided, fair, ₩ ℔, 24½@25¢
Common Russia Sash.....₩ ℔, 12½@13¢
Patent Russia Sash.....₩ ℔, 14¢
Cable Laid Italian Sash.....₩ ℔, 21@22¢
India Cable Laid Sash.....₩ ℔, 12¢
Silver Lake—
A quality, White, 50¢.....25%
A quality, Drab, 55¢.....25%
B quality, White, 30¢.....10%
B quality, Drab, 35¢.....10%
Sylvan Spring, Extra Braided, White.34¢
Sylvan Spring, Extra Braided, Drab..30¢
Semper Idem, Braided, White....27@28¢
Egyptian, India Hemp, Braided.....26¢
Massachusetts, White.....29¢
Samson—
Braided, White Cotton .....₩ ℔, 37¢
Braided, Drab Cotton.....₩ ℔, 42¢
Braided, Italian Hemp.....₩ ℔, 40¢
Braided, Linen.....₩ ℔, 56¢
Tate's Cotton Braided, White, ₩ ℔, 28¢.10%
Ossawan Mills—
Braided, Giant, White, ₩ ℔, 30¢....20%
Braided, Giant, Drab and Fancy, ₩ ℔, 35¢.....10%
Braided, Crown White, ₩ ℔, 50¢...50%
Braided, Crown Drab and Fancy, ₩ ℔ 5¢.....30%

Wire Picture—

Braided or Twisted .....80&5@80&15%

Corkscrews—See *Screws, Cork.*

Corn Knives and Cutters—See *Knives, Corn.*

Crackers, Nut—

Table (H. & B. Mfg. Co).....40%
Blake's Pattern, ₩ doz., $2.00.....10%
Turner & Seymour Mfg. Co.....50%
Acme.
Japanned, ₩ gro., $30.....50%
Nickel Plated, ₩ gro. $30.....10%

Cradles—

Grain.....50&5&2@50&10&2%

Crayons—

White Crayons, ₩ gross.....7@8¢
D. M. Stewart Mfg. Co., Metal Workers', ₩ gross, $2.50.....25%
D. M. Stewart Mfg. Co., Rolling Mill, ₩ gross, $2.50.....25%
See also *Chalk.*

Crow Bars—See *Bars, Crow.*

Curry Combs—See *Combs, Curry.*

Curtain Pins—See *Pins, Curtain.*

Cutters—

Meat—

Dixon's, ₩ doz.....40&5%

Nos.	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Woodruff's, ₩ doz.....40&5%

Nos.		100	150
		$15.00	$18.00

Hale's Pattern, ₩ doz.....70&70&5%

Nos.	11	12	13
	$27.00	$33.00	$45.00

American.....30%

Nos.	1	2	3	4	5
Each	$5	$7	$10	$25	$50	$60

Enterprise.....30%

Nos.	10	12	22	32	42
Each	$3	$2.50	$4	$6	$15

Great American Meat Cutter ..30@30&5%

Nos...	112	116	118	120	122
Each.	$2.00	$2.75.	$3.00	$3.50	$4.00

Miles' Challenge, ₩ doz.....45@45&10%

Nos.	1	2	3
	$22.00	$30.00	$40.00

Home No. 1, ₩ doz., $20.00.....55&10%
Draw Cut, each:

Nos.	5	6	8
	$50	$75	$80	$225

Beef Shavers (Enterprise).....20@25%
Little Giant (P. S. & W. Co.).....30%
Chadborn's Smoked Beef Cutter, ₩ doz., $66.00

Tobacco

Champion.....20&10@30%
All Iron.....₩ doz., $4.25
Nashua Lock Co.'s..₩ doz., $18.00, 50@55%
Wilson's.....55%
Sargent's.....₩ doz., $24.00, 55&10
Acme.....₩ doz., $20.00, 40%

Washer—

Smith's Pat....₩ doz., $12.00, 20&10&10%
Johnson's.....₩ doz., $11.00, 33⅓%
Penny's..₩ doz., Pol. $14 ; Jap'd, $16, 55%
Appleton's.....₩ doz., $16.00, 60&10%
Bonney's.....30&10%
Cincinnati.....25&10%

Dampers, &c.—

Dampers, Buffalo.....40&10%
Buffalo Damper Clips.....40&10%
Crown Damper.....40%
Excelsior.....40&10%

Diggers, Post Hole, &c.—

Samson, ₩ doz., $34.00.....25@25&10%
Fletcher Post Hole Augers, ₩ doz., $36.00, 20@20&10%
Eureka Diggers....₩ doz., $14.00@$15.00
Leed's.....₩ doz., $8.00@$9.00
Vaughan's Post Hole Auger, ₩ doz., $8.50@$9.50
Kohler's Little Giant.....₩ doz., $18.00
Kohler's Hercules.....₩ doz., $14.00
Kohler's Invincible.....₩ doz., $12.00
Kohler's New Champion....₩ doz., $8.00
Scheidler.....₩ doz., $18.00
Ryan's Post Hole Diggers..₩ doz., $24.00
Cronk's Post Bars, ₩ doz., $30.00, 50&5@50&10%
Gibb's Post Hole Digger....₩ doz., $15.00
Gibbs' National .....₩ doz., $12.00
Gibbs' Columbia.....₩ doz., $13.00
Gibbs' Imperial.....₩ doz., $7.50
Shimer's Hollow Handle..₩ doz., $24.00, 50%

Dividers—See *Compasses.*

Dog Collars—See *Collars, Dog.*

Door Springs—See *Springs, Door.*

Drawers.

Money, ₩ doz.....$18@$20

Drawing Knives—See *Knives, Drawing.*

Drills and Drill Stocks—

Blacksmiths'.....each $1.75
Blacksmiths' Self-Feeding, each $7.50, 20%
Drill, P. S. & W.....40&10%
Breast, Wilson's.....30&5%
Breast, Millers Falls.....each $3.00, 25%
Breast, Bartholomew's....each $2.50, 25&10@40%
Ratchet, Merrill's.....20@20&5%
Ratchet, Ingersoll's.....25%
Ratchet, Parker's.....20@20&5%
Ratchet, Whitney's.....20&10%
Ratchet, Weston's.....20@25%
Ratchet, Moore's Triple Action....25@30%
Ratchet, Curtis & Curtis.....30%
Whitneys Hand Drill, Plain, $11.00:
Adjustable, $12.00.....20&10%
Wilson's Drill Stocks.....10%
Automatic Boring Tools.....$1.75@$1.85
Chicopee Automatic Drill.....20&10%

Twist Drills—

Cleveland.....50&10&10%
Diamond, W. & B.....50&10&10%
Graham's Pat. Groove Shank.50&10&10%
Morse.....50&10&10%
New Process.....50&10&10%
Standard.....50&10&10%
Syracuse (Meta list).....50f 10%

Drill Bits or Bit Stock Drills—See *Augers and Bits.*

Drill Chucks—See *Chucks.*

Dripping Pans—See *Pans, Dripping.*

Drivers, Screw—

Douglass Mfg. Co.....20@20&10%
Disston's.....50%
Buck Bros.....30%
Stanley R. & L. Co.'s
No. 64, Varnished Handles.....65&10%
No. 86.....70&10%
Sargent & Co.'s
No. 1, Forged Blade.....60&10&10%
Nos. 20, 40 and 60.....60%&10&10%
P. S. & W.....70%
Knapp & Cowles
No. 1.....60&20&70%
No. 2.....60&10&10@70&5%
No. 3.....60&5@60&10%
Nos. 4 and 00, Acme and Ideal...50&5@50&10&5%
Stearns'.....25&10&5%
Gay & Parsons.....35%
Champion.....25&10%
Clark's Pat.....30@33⅓%
Crawford's Adjustable.....30%
Ellrich's Socket and Ratchet..25@25&10%
Allard's Spiral, new list.....25%
Kolb's Common Sense..₩ doz., $6.00, 25&10%
Syracuse Screw-Driver Bits.....30&30&5%
Screw Driver Bits.....₩ doz., 50@75¢
Screw Driver Bitts, Parr's..₩ gross, $6.25
Fray's Hol. H'dle Sets...No. 3, $12.00, 45%
P. D. & Co.'s All Steel.....50%
Cincinnati.....25&10%
Brace Screw Drivers.....25&10%
Buck Bros.' Screw Driver Bits....27½&5%
Goodell's Automatic.....50%
Mayhew's Black Handle.....50%
Mayhew's Monarch.....45&10%
C. T. Williamson Wire Novelty Co.....50%

Egg Beaters—See *Beaters, Egg*

Egg Poachers—See *Poachers, Egg.*

Electric Bell Sets—See *Bells, Electric.*

Emery—No. 4 to No. 54 to Flour, CF.

	46 gr.	150 gr.	F.FF.
Kegs, ₩ ℔.....	4½¢	5 ¢	2½¢
½ kegs, ₩ ℔...	4¾¢	5½¢	2¾¢
¼ kegs, ₩ ℔...	5 ¢	5¾¢	3 ¢
10-₩ cans, 10 in case.....	6 ¢	6½¢	5 ¢
10-℔ cans, less than 10.....	10 ¢	10 ¢	7½¢

Enameled and Tinned Ware—See *Ware, Hollow.*

Escutcheon Pins—See *Pins, Escutcheon.*

Escutcheons—

Door Lock....Same dis. as Door Locks.
Brass Thread.....60@60&10%
Wood.....25%

Expanded Metal—List No. 5.

Lathing.....10%
Fencing, Painted Sheets.....20%
Netting, Painted Sheets.....20%
Door Mats, Galvanized.....25%
Window Guards, Paneled.....15%
Tree Guards, Paneled.....15%

Extractors, Lemon Juice—See *Squeezers, Lemon.*

Fasteners, Blind—

Mackrell's, ₩ doz., $1.00.....20@20&10%
Van Sand's Screw Pat, $15 ₩ gr.. 60&10%
Van Sand's Old Pat., $15 ₩ gr....55&10%
Austin & Eddy No. 2008.....₩ gr., $9.00
Security Gravity.....₩ gr., $9.00
Zimmerman's.....50%

Faucets—

Fenn's.....40%
Bohren's Pat. Rubber Ball.....25%
Fenn's Cork Stops.....33⅓%
Star.....60%
Fray's Pat. Petroleum.....60%
B. & L. B. Co.
West's Lock, Open and Shut Key..50%
Star, Metal Plug, new list.....40%
Lockport, Metal Plug, reduced list..60%
Metallic Key, Leather Lined....60&10@60&10&10%
Cork Lined.....70&5@70&10%
Burnside's Red Cedar.....50%
Burnside's Red Cedar, bbl. lots....50&10%
John Sommers'
Peerless Best Block Tin Key 40%
IXL, 1st quality, Cork Lined.....50%
Diamond Lock.....40%
Perfection, Fla. Red Cedar.....50%
Goodenough Cedar.....50%
Boss Metallic Key.....50%
Reliable Cork Lined.....60%
Western Pattern Cork Lined.....50%
Self Measuring
Enterprise, ₩ doz., $36.00.....30%
Lane's ₩ doz., $36.00.....25&10%
Victor.....₩ doz., $36.00 25&10%

Felloe Plates—See *Plates, Felloe.*

Fibre Ware—See *Ware Fibre.*

Fifth Wheels—

Derby and Cincinnati.....45&5%
Brewster.....50&5%

Files—

Domestic—

Nicholson Files, Rasps, &c.60&10&5@60&10&10%
Nicholson (X.F.) Files.....25%
Nicholson's Royal Files (Seconds).....75% (extra prices on certain sizes.)
American.....66⅔&10@66⅔&10&5%
G. & H. Barnett (Black Diamond) 60&10@60&10&5%
Arcade.....60&10&10@70%
Eagle.....60&10&10@70%
Other makers, best brands..60&10&5@70%
Fair brands.....70&70&10%
Second quality.....75@75&10&5%
Heller's Horse Rasps.....50&7½@50&10%
McCaffrey's Horse Rasps.....50&10%
Chelsea Horse Rasps, Hand Cut..50&10@50&10&5%
Arcade Horse Rasps....60&10@60&10&5%

Imported—

Butcher.....Butcher's list, 20%
Stubs .....Stubs list, 25@30%

Fixtures, Grindstone—

Sargent's Patent.....70&10%
Reading Hardware Co.....30&10%
P., S. & W. Co.....50&10%

Fluting Machines—See *Machines, Fluting.*

Fluting Scissors—See *Scissors, Fluting.*

Fodder Squeezers—See *Squeezers, Fodder.*

Forks—

Hay, Manure, &c.Asso. List, 70@70&5&2%
Hay, Manure, &c., Phila. List, 60@60&10&3%
Plated, see Spoons.

Frames—

Saw—

White Vermont.....₩ gro., $9.00@$10.00
Red, Polished and Varnished....₩ doz., $1.50, 25%

Screen, Window and Door—

Porter's Pat. Window and Door Frame, 33⅓&10%
Warner's Screen Corner Irons....33⅓%
Stearns' Frames and Corners.25@25&10%
Cortland.....40@40&5

Freezers, Ice Cream—

White Mountain.....60@60&5%
Granite State.....65@65&5%
Arctic.....70@70&5%
American.....60%
Buffalo Champion.....65@65&5%
Shepard's Lightning.....65@65&5%
Gem.....65%
Blizzard.....70%
Double Action Crown.....60%
Crown.....60%
Star.....60%
Peerless.....60&10%
Giant.....60%
Zero.....60&10&10%
Boss and Pet.....60&10&10%
Keystone, P., D. & Co., each, $1.50....20%
Standard.....60@60&5%
Standard Double Action.....60@60&5%
Expert.....65@65&5%
Model.....60@60&5%
Confectioners' Machine.....50%

Fruit and Jelly Presses—See *Presses, Fruit and Jelly.*

Fry Pans—See *Pans, Fry.*

Funnels—

Gersdorff's Perfection, Standard and Globe; *Tin*, 1 gro., 10% ; 2 to 5 gro., 20% ; 5 to 10 gro.....30%
Copper, 1 to 6 doz., 15% ; 6 to 12 doz., 20% ; over 12 doz.....25%

Furnaces, Soldering—

Burgess No. 3 Gem tin reservoir....$7.00
Burgess No. 3 Gem, Copper reservoir.$8.50

Fuse—Dis. 12½@15%. ₩ 1000 ft.

Common Hemp Fuse, for dry ground..$2.70
Common Cotton Fuse, for dry ground 2.85
Single Taped Fuse, for wet ground.. 3.85
Double Taped Fuse, for very wet gr.. 4.80
Triple Taped Fuse, for very wet gr.. 5.80
Small Gutta Percha Fuse, for water. 7.50
Large Gutta Percha Fuse, for water.12.00

Gates Molasses—

Stebbin's Pattern.....80@80&5%
Stebbin's Genuine.....60&10&10%
Stebbin's Tinned Ends.....40&10%
Chase's Hard Metal.....50&10%
Bush's.....20%
Lincoln's Pattern.....70@70&10%
Weed's.....20&10%
Boss, ₩ doz.:
No. 1, $7; No. 2, $8; No. 3, $9; No. 4, $10.....60&10&10%

Gauges—

Marking, Mortise, &c.....60&10%
Starrett's Surface, Center and Scratch, 25&10%
Stanley R. & L. Co.'s Butt and Rabbet Gauge.....20&10%
Hosgue & Peck's Champion Gauge—
With Scale.....₩ doz., $5.00
Without Scale.....₩ doz., $4.00
Wire, Wheeler, Madden & Co.....10%
Wire, Morse's.....25%
Wire, Brown & Sharpe's.....10@20%
Wire, P., S. & W. Co.....10&10%

Gimlets—

Nail and Spike.....50&10&5%
Eureka Gimlets.....60&10%
Diamond Gimlets.....₩ gr $5.00
Double Cut, Shepardson's.....45@45&5%
Doub e Cut, Ives'.....60@60&5%
Doub.e Cut, Douglass'.....40&10%

Glue—

I e Page's Liquid.....25@25&5%
Upton's Liquid.....35%
Improved Process.....25@25&5%
Dodd's Liquid Glue.....25@25&

Glue Pots—See *Pots, Glue.*

Grease, Axle—

Fraser's.....Keg ₩ ℔ 4¢, Pail ₩ ℔ 5¢
Fraser's, in boxes.....₩ gr $9.50
Dixon's Everlasting, in bxs., ₩ doz 1 ℔ $1.20; 2 ℔ $2.00
Dixon's Everlasting....10-℔ palls, ea. 83¢
Lower grades, special brands, ₩ gr $5.50@$7.00
Axleine, tin boxes.....₩ gross $12.00
English Coach, wooden boxes.....₩ gross $8.50
English Coach, 5-℔ tin pails. ₩ doz. $3.50
Tiger, wooden boxes.....₩ gross $7.00
Tiger, 5-℔ tin pails.....₩ doz $2.85

Grindstones—

Small, less than car load lots at quarry.....₩ ton $9.00 @ $10.00
Family, regular list.....60%
Family, Cleveland Stone Co.....20%

Grindstone Fixtures—See *Fixtures, Grindstone.*

Gun Powder—See *Powder.*

Hack Saws—See *Saws.*

Hafts, Awl—

Sewing, Brass Fer. ₩ gr.....$1.75
Pat. Sewing, Short. ₩ doz.....45@50%
Pat. Sewing, Long.....₩ doz $1.90
Pat. Peg, Plain Top. ₩ doz .....40@45%
Pat. Peg, Leather Top.....₩ doz 48@50%

Halters—

Covert's, Rope, Jute.....60&10&10&2%
Covert's Rope, 7-16-in., Jute.....70&2%
Covert's Rope, ½-in., Hemp.....50&2%
Covert's Adj. Rope Halters.....40&2%
Covert's Hemp Horse and Cattle Tie, 50&10&2%
Covert's Jute Horse Ties.....70&2%
Covert's Jute Cattle Ties.....70&10&2%
Covert's Adj. Web Halters.....35&5&2%
Covert's Saddlery Works Halters...33⅓%
Covert's Saddlery Works Horse and Cattle Ties.....33⅓%

Hammers—

Handled Hammers—

Maydole's, list Dec. 1, '85.....25&10@35%
Buffalo Hammer Co. / Humason & Beckley / Atha Tool Co. / Verree.....50&10%
C. Hammond & Son.....40&10@—%
Fayette R. Plumb.
Artisans' Choice, A. E. Nail.....40&10%
Regular Y. & P., A. E. Nail.....50%
Horseshoe Turning Hammers.....50%
Other Hammers.....50&10%
Cheney's Claw.....40&10%
Cheney's Machinist's & Riveting...50&5%
Magnetic Tack, Nos. 1, 2, 3, $1.25, 1.50 & 1.75.....30&10%
Nelson Tool Works.....40&10%
Warner & Nobles, new list.....25&10
Peck, Stow & Wilcox.....40&10@50%
Sargent's.....40@40&10%

Heavy Hammers and Sledges—

3 ℔ and under...₩ ℔40¢ / 3 to 5 ℔.....₩ ℔30¢ / Over 5 ℔.....₩ ℔30¢ — 75&10@75&10 &5%
Wilkinson's Smiths.....10½¢@11¢₩ ℔

Handcuffs and Leg Irons

—See *Police Goods.*

Handles—

Cross-Cut Saw Handles—

Atkins' No. 1 Loop, ₩ pr., 28¢; No. 3, 18¢; No. 6, 15¢; No. 2 and No. 4, Reversible, 18¢.
Champion.....15%
Ely's Perfection.....₩ doz., $3.00

Iron, Wrought or Cast—

Door or Thumb.

Nos.	0	1	2	3	4
Per doz.	$0.90	1.00	1.08	1.35	1.50

60&10&10%
Roggin's Latches.....₩ doz 30¢@35¢
Bronze Iron Drop Latches..₩ doz 70¢ net
Jap'd Store Door Handles—Nuts, $1.62; Plate, $1.10; no plate, $0.88.....net
Barn Door, ₩ doz $1.40.....10&10%
Chest and Lifting.....70&70&10%

Wood—

Saw and Plane.....40&10&50%
Hammer, Hatchet, Axe, &c.....40@40&5%
Brad Awl.....₩ gr $2.00
Hickory Firmer Chisel, ass'd..₩ gr 4.50 / Hickory Firmer Chisel, large..₩ gr 5.00 / Apple Firmer Chisel, ass'd...₩ gr 5.00 / Apple Firmer Chisel, large...₩ gr 6.00 / Socket Firmer Chisel, ass'd..₩ gr 3.00 / Socket Framing Chisel, ass'd..₩ gr 5.00 — 40&10@50%
J. B. Smith & Co.'s Pat File.....50%
File, assorted.....₩ gr 2.75
Auger, assorted.....₩ gr 5.00 — 50%
Auger, large.....₩ gr 7.00
Pat. Auger, Ives'.....30&10%
Pat. Auger, Douglass.....₩ set $1.25
Pat. Auger, Swan's.....₩ set $1.00
Hoe, Rake, Shovel, &c.....60@60&5%

Hangers—

Barn Door, old patterns...60&10&10@70%
Barn Door, New England..60&10&10@70%
Samson Steel Anti-Friction.....55%
Orleans Steel.....55%
Hamilton Wrought Steel Track.....55%
U. S. Wood Track.....65%
Champion.....60&10%
Rider and Wooster, Medina Mfg. Co.'s list.....70%
Climax Anti-Friction.....55%
Climax Anti-Friction for Wood Track.55%
Zenith for Wood Track.....55%
Reed's Steel Arm.....50%
Challenge, Barn Door.....50%
Sterling.....50&50&10%
Victor, No. 1, $15.00; No. 2, $16.50; No. 3, $18.00.....50&2%
Cheritree.....50&10%
Kidder's.....40&10&50%
Boss.....60&10%
Best Anti-Friction.....60&10%
Duplex (Wood Track).....60&10&5%
Terry's Pat., ₩ doz pr. 4 in., $10.00; 5 in. $12.00.....50&10%
Terry's Steel Anti-Friction Leader.50&10%
Terry's Steel Anti-Friction Ideal..50&10%
Cronk's Patent, Steel Covered.....50&5%
Wood Track Iron Clad, ₩ ft. 10¢.....50 &15&60%
Carrier Steel Anti-Friction.....50&10%
Architect, ₩ set $6.00.....20%
Eclipse.....20&10%
Felix, ₩ set $4.50.....20%
Richards'.....30&30&10%
Lane's New Standard.....50@50&5%
Lane's Standard.....50&5@50&10%
Lane's Parlor.....40%
Ball Bearing Door Hanger.20&10@25&10%
Warner's Pat.....20&10@20&10%
Stearns' Anti-Friction..20&10@20&10%
Stearns' Challenge.....25&10@25&10%
Faultless.....40@40&5%
American, per set $6.00.....20&10%
Rider & Wooster, No. 1, 62½¢; No. 2, 75¢.....40%
Paragon, Nos. 1, 2 and 3.....40&10%
Cincinnati.....25&10%
Paragon, Nos. 5, 5¼, 7 and 8.....20&10%
Crescent.....60@60&10%
Nickel, Steel, Nos. 0, $25; 1, $20; 2, $15. 20&10%
Scranton Anti-Friction Single Strap.33⅓%
Wild West, 4 in. Wheel, $15.00; 5 in. Wheel, $21.00.....45%
Star.....40&10@40&10&5%
May.....50&5@50&10%
Barry, $6.00.....40&10%
Interstate.....50%
Magic.....45%
Pendulum, Payson's.....40%
Woody.....45%

Harness Snaps—See *Snaps.*

Hatchets—

American Axe and Tool Co. / Blood's / Hunt's / Hurd's / Mann's / Peck's / Underhill's / Buffalo Hammer Co. / Fayette R. Plumb. / C. Hammond & Son. / Kelly's / Sargent's & Co. / P., S. & W. Co. / Ten Eyck Edge Tool Co. / Collins / Schulte, Lohoff & Co. — 40 & 10 @ 50&5%

Hay and Straw Knives—

See *Knives.*

Hinges—

Blind Hinges—

Parker.....75&2%
Huffer.....50%
Clark's, Nos. 1, 3, 5, 40 and 50..80@80&5%
Clark's Mortise Gravity.....50%
Sargent's, Nos. 1, 3, 5, 11, 12, 13.75@75&10%
Reading's Gravity.....75&10@75&10&5%
Shepard's.
Noiseless.....75&10%
Niagara.....80%
Buffalo.....80%
Clark's Genuine Pattern.....80%
O. S., Lull & Porter.....75&10%
Acme, Lull & Porter.....75%
Queen City Reversible....70&10&5@75%
Clark's, Lull & Porter, Nos. 0, 1, 1½, 2, 2½, 3.....75&10&2½%
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%

Gate Hinges—

Western.....₩ doz $4.20, 60@60&10%
N. E.....₩ doz $7.80, 60@60&10%
N. E. Reversible ₩ doz...$5.60, & @60&10%
Clark's, Nos. 1 ,2, 3.....60&10&5%
N. Y. State.....₩ doz $4.90,60@60&10%
Automatic.....₩ doz $12.50, 50%
Shepard's.....60&10&5%

Spring Hinges—

Geer's Spring and Blank Butts....40% / Union Spring Hinge Co.'s list, March, 1886.....20% / Barker's Double Acting.....25% / Union Mfg. Co.....25% / Bommer's.....30% / Buckman's.....15@20% / Chicago.....30% / Bardsley's Patent Checking.....15% / Acme.....30% / U. S.....25&10% / Empire and Crown.....20% / Hero and Monarch.....55% / American, Gem and Star.....20% / Oxford.....20% / Royal.....66⅔% / Reliable.....60% / Champion.....60% / No. 10 Matchless.....60% / No. 25 Unbreakable.....60% / J. G. C. Covered, ₩ gro., $30.....50&5% / Samson.....60@60& 10% / Wiles', No. 1, ₩ gro., $16; No. 2.....$13 / Devore, No. 1.....₩ gro., $13.00 / Rex.....₩ gro., $13.00 / Freeport.....₩ gro., $12.00 — Extra 5@10% often given.

Wrought Iron Hinges—

List February 14, 1891.
Strap and T.....50&10@50&10&5%
Corrugated Strap and T.....50&10&5%
Screw Hook and Strap.....6 to 12 in., ₩ ℔.. 4¢ / 14 to 20 in., ₩ ℔..3½¢ / 22 to 36 in., ₩ ℔.. 3¢
Screw Hook and Eye.....¼ in., ₩ ℔ 7¾¢ / ⅜ in., ₩ ℔ 5¾¢ / ½ in., ₩ ℔ 4¾¢
Rolled Blind Hinges, Nos. 32 and 34 50&10%
Rolled Blind Hinges, Nos. 232 and 234 55&10%
Rolled Plate.....70&10%
Rolled Raised.....70&10¢
Plate Hinges (8, 10 & 12 in., ₩ ℔.....5¢ / "Providence" { over 12 in. ₩ ℔.....4¢

Hoes—

Eye—

D. & H. Scovil.....20%
Lane's Crescent, Planters' Pattern.45&5%
Lane's Razor Blade, Scovil Pattern...30%
Maynard, S. & O. Pat.....45&5%
Sandusky Tool Co., S. & O. Pat / Am. Axe and Tool Co., S. & O. Pat. — 70@70& 5%
Chattanooga Tool Co., S. & O. Pat..60& 5@60&10%
Grub.....60&10%

Handled—

Garden, Mortar, &c.....70@70&5&2%
Planter's, Cotton, &c.....70@70&5&2%
Warren Hoe.....60@60&5%
Magic.....₩ doz $4.00

Hog Rings and Ringers—

See *Rings and Ringers—*

Hoisting Apparatus—

See *Machines, Hoisting.*

Hollow-Ware—

See *Ware, Hollow.*

Holders—

Bag—

Sprengle's Pat.....₩ doz $18....60%

Bit—

Extension.
Barber s, ₩ doz $15.00.....40@40&10%
Ives, ₩ doz $20.00.....60&5@60&10%
Diagonal.....₩ doz $24.00, 40%
Angular.....₩ doz $24.00, 40&5%

File and Tool—

Balz Pat.....₩ doz $4.00, 25%
Nicholson File Holders.....20%
Dick's Tool Holder.....20%

Hooks—

Cast Iron—

Bird Cage, Sargent's List.... / Bird Cage, Reading..... / Clothes Line, Sargent's list — 60&10&10%
Clothes Line, Reading list, 60&10@60&10&10%
Ceiling, Sargent's list.....55&10&10%
Harness, Reading list..55&10@55&10&10%
Coat and Hat, Sargent's list. 55&10@60&10%
Coat and Hat, Reading. 50&10@50&10&10%

Wrought Iron—

Cotton.....₩ doz $1.25
Cotton Pat. (N. Y. Mallet and Handle W'ks.....30%
Tassel and Picture, T. & S. Mfg. Co....50%
Wrought Staples, Hooks, &c. See Wrought Goods

Wire—

Wire Coat and Hat, Gem, list April, 1886.....60@60&10
Wire Coat and Hat, Miles, list April, 1886.....50@50&10%
Indestructible Coat and Hat...45@45&5%
Wire Coat and Hat, Standard.60@60&10%
Handy Hat and Coat.....60&10@60%
Steady Ceiling Hooks.....50&10@60%
Belt.....80&15@80&20%
Atlas, Coat and Hat.....60@60&10%
Williamson's Bird Cage Hooks, List April, 1892.....40%
Bright Wire Goods—See Wire.

Miscellaneous—

Grass, No. 2, $2.00; No. 3, $2.10; No. 4, $2.25
Nolin's Grass.....₩ doz $2.25
Bush.....55@60%
Whiffletree—Patent.....55%
Hooks and Eyes—Malleable Iron. 70@70&10%
Hooks and Eyes—Brass.....60&10&10%
Fish Hooks, American.....50%
Bench Hooks—See Bench Stops.

Horse Nails—See *Nails, Horse*

Horse Shoes—

See *Shoes, Horse.*

Hose, Rubber—

Competition.....75@75&10&5%
Standard.....60&10&10@70&10%
Extra.....60@60&10%
N. Y. B. & P. Co., Para.....25&5%
N. Y. B. & P. Co., Extra.....40@40&5%
N. Y. B. & P. Co., Dundee.....50&10@60%

Huskers—

Blair's Adjustable.....₩ gr $8.00
Blair's Adjustable Clipper.....₩ gr 7.00
Hubbard's Solid Steel.....₩ gr 4.50

Indurated Fiber Ware—

See *Ware, Indurated Fiber.*

Irons.

Sad—

From 4 to 10, at factory....₩ 100 ℔, $2.30@$2.40
Self-Heating.....₩ doz $8.00
Self-Heating Tailors'.....₩ doz $18.00
Mrs. Pott's Irons, list June 1, 1892....30%
Enterprise Star Irons, list June 1, '92..30%
Crown.....60&10@60&10&5%
Ideal Irons, new list...50&10@50&10&10%
Salamander Irons.....25%
B. B. Sad Irons, ₩ ℔.....3¢@3¼¢
Combined Fluter and Sad Iron, ₩ doz, $15.00.....15%
Fox Reversible Self-Fluter, ₩ doz..$24.00
Chinese Laundry (N.E.Butt Co.).81¢¢, 15%
New England.....5¢, 15%
Mahony's Troy Pol. Irons.....25%
Sensible, list Jan. 91.....50&10&5%
Sensible Tailor's Irons.....33⅓%
National Self-Heating.....30%

Soldering—

Soldering Coppers.....₩ ℔ 19@21¢
Covert's Adjustable, list Jan. 1, 1886, 35&2%

Pinking—

Pinking Irons, ₩ doz., 55@60¢.

Jack Screws—See *Screws.*

Jacks, Wagon—

Daisy.....33⅓%
Victor.....33⅓%
Lockport.....40%

Kettles—

Brass, Spun, Plain, list Jan. 1, '91..25&5%
Brass, Spun, Pld.W.M.list Jan. 1, '91..20%
Enameled and Tea—See *Ware, Hollow.*

Keys—

Lock, Ass'n list Dec. 30, 1886.50&10@ 60&5%
Eagle, Cabinet, &c.....33⅓&2%
Hotchkiss' Brass Blanks.....40%
Hotchkiss' Copper and Tinned.....40%
Hotchkiss' Pad. and Cab.....35%
Ratchet Bed Keys.....₩ doz. $4.00, 15%
Wollensak Tinned.....50&10%

Knife Sharpeners—

See *Sharpeners, Knife.*

Knives—

Butcher, Shoe, &c.

Wilson's Butcher Knives, List Dec 8, 1890.....25%
Ames' Butcher Knives.....25%
Foster Bros.' Butcher, &c.....40%
Jordan's AA A1 Butchers', list.....net
Nichols' Butcher Knives.....40&10%
W. W. Wilson, Butcher, 6 in., $2.00; 7 in., $2.70; 8 in., $3.80, &c.
Ames' Shoe Knives.....20@25%
Ames' Bread Knives, ₩ doz $1.50, 15@20%
Moran's Shoe and Bread.....20@20&10%
Hay and Straw—See Hay Knives.
Table and Pocket—See Cutlery.

Corn—

Bradley's.....10%
Wadsworth's.....25@25&10%

Drawing—

Witherby / P., S. & W. / Mix / New Haven — ...75@75&10&5%
Merrill.....60&10@60&10&5%
Douglass.....75&75@5%
Watrous.....15&10@25%
L. & I. J. White.....20&5%
Bradley's.....35%
Adjustable Handle.....25@33⅓%
Wilkinson's Folding.....25@25&1%

Hay and Straw—

Lightning, from jobbers....$8.00@$9.00
Wadsworth's.....40&7½@40&10%
Carter's Needle...₩ doz. $11.00@$11.50
Heath's.....₩ doz. $13.00@$13.50
Nolin's Hay..₩ doz. $7.00@$8.00

Mincing—

Am. (2d quality), ₩ gr., 1 blade, $7 2 blades, $12; 3 blades, $18.....net
Lothrop's.....20&10%
Smith's, ₩ doz., Single, $2; Double $3 45&50%
Knapp & Cowles.....50&10@60%
Buffalo Adjustable.....₩ doz. $3.00, 25%
Buffalo Double Adjustable.. ₩ doz. $3.00

Knobs—

Door, Mineral.....60@65%
Door, Por. Jap'd.....70@75%
Door, Por. Nickel.....$2.00@$2.25
Door, Por. Plated Nicke..l....$2.00@$2.25
Drawer, Porcelain.....60&10@60&10&10%
Hematite Door Knobs.....40&10@50%
Yale & Towne Wood, list Dec., 1885...40%
Furniture Plain.....75¢ gro inch, 10%
Furniture, Wood Screws.....25&10%
Base, Rubber Tip.....70&10&5%
Picture, Judd's.....60&10&10@70%
Picture, Sargent's.....70&10%
Picture, Hematite.....35&5%
Shutter, Porcelain.....65&15%
Carriage, Jap.....₩ gro 30¢, 60&10%
Bardsley's Wood Door, Shutter, &c...15%

Ladies—

Melting, Sargents'.....60@60&5%
Melting, Reading.....35&10%
Melting, Monroe's Pat...₩ doz $4.00, 40%
Melting, P., S. & W.....35&10@40%
Melting, Warner's.....30%

Lanterns—

Tubular—

Regular, with Guard.....₩ doz $3.50
O. K., with Guard.....₩ doz $3.75
Side Lift, with Guard.....₩ doz $4.00
Square Lift, with Guard.....₩ doz $4.25
Anti-Friction, with Guard....₩ doz $4.50
Brass Plated, Sq. Lift, Guard.₩ doz $5.50
Cop. Plated, Sq. Lift, Guard..₩ doz $5.50

Bull's Eye Police—

2¾-inch regular.....₩ doz $3.60
3-inch regular.....₩ doz $3.90
2¾-inch flash light.....₩ doz $4.00
3-inch flash light.....₩ doz $4.50

Lawn Mowers—

See *Mowers, Lawn.*

Leaders, Cattle—

Humason, Beckley & Co.'s.....70%
Sargent's.....70&10@70&10&10%
Hotchkiss.....30%
Peck, Stow & W. Co.....60&10%

Lemon Squeezers—

See *Squeezers, Lemon.*

Lifters, Transom—

Wollensak's:
Class 3 and 4, Bronzed Iron.....50%
Class 3 and 4, Bronze Metal.....25%
Class 3 and 4, Brass.....35%
Skylight Lifters.....35%
Crown, Eagle and Shield.....50%
Reiher's, list Feb. 20, 1891
Bronzed Iron Rods.....50&10&2½%
Brass, Real Bronze or Nickel Plate..30%
Excelsior.....50&10&2½%
Shaw's.....50&10%
Payson's:
Universal.....60%
Solid Grip.....60&10@60&10&10%
Imperial.....50&10%

Lines—

Cotton and Linen Fish, Draper's.....50%
Draper's and Tate's Chalk.....60%
Draper's Masons' Linen, 84 ft., No. 1, $1.25; No. 2, $1.75; No. 3, $2.25; No. 4, $2.75; No. 5, $3.25.....25%
Cotton Chalk.....55%
Samson Cotton, No. 4, $2; No. 4½, $2.50. 10%
Silver Lake, Braided, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ₩ gro.....25%
Mason's Linen, No. 3½, $1.50; No. 4, $2.00; No 4½, $2.50.
Mason s Colored Cotton.....45%

Wire Clothes..Nos.	18	19	20
100 ft.	$3.50	$3.00	$2.50

Ventilator Cord, Samson Braided, White or Drab Cotton..₩ doz $7.50..20%
Ossawan Mills, Chalk, Twisted, 60%; Chalk, Soft Braided, 50% Chalk, Braided, 25%.

Links, Open—

Terry's—per gro.:

Nos.	1	2	3	4
	$6.00	8.00	12.00	16.00

Locks, &c.—

Cabinet—

Eagle, Gaylord Parker and Corbin... / List March, '84, rev. Jan. 1, '85.33⅓&2%
Deitz, Nos. 36 to 39.....40%
Deitz, Nos. 51 to 63.....40&10%
Deitz, Nos. 87 to 96.....30%
Stoddard Lock Co.....30@33⅓%
"Champion" Night Latches.....40%
Barnes Mfg. Co.....40@40&10%
Eagle and Corbin Trunk.....25&10%
"Champion" Cab. and Combin..33⅓%
Yale.....net prices
Romer's.....25%

Door, Locks, Latches, &c.—

R. & E. Mfg. Co., list Mar. 20, 1889 / Mallory, Wheeler & Co., list July, '88 / Sargent & Co., List Aug. 1, '88 / Branford Lock Works — 65&10@70% Much lower net prices often made

Brittan, Graham & Mathes, list Jan. 1890.....60&10&10%
Perkins' Burglar Proof.....60&25%
Plate.....33⅓&2%
Barnes Mfg. Co.....40&40&10%
Yale.....net prices
Deitz Flat Key.....30%
L. & C. Round Key Latches.....30&10%
L. & C. Flat Key Latches.....33⅓&10%
Romer's Night Latches.....15%
Brooklyn Latches.....60&10%
Shepardson or U. S.....35%
Steel's N. Y. Hasp Lock.....25%

Padlocks—

List June 10, 1891.....50&2%
Norwich Lock Mfg. Co., old list....50&2%
Yale Lock Mfg. Co.'s.....net prices
Eagle.....40%
Eureka, Eagle Lock Co.....40&2%
Romer's Nos. 0 to 91.....30%
Romer's Scandinavian, &c., Nos. 100 to 505.....15%
A. E. Deitz.....40%
Champion Padlocks.....40%
Hotchkiss.....30%
Star.....60%
Horseshoe.....₩ doz $9, 40&40&10%
Barnes Mfg. Co.....40&40&10%
Nock's.....30%
Brown's Pat.....25%
Scandinavian.....90&40%
E. T. Fraim's Keystone Scandinavian, Nos. 119, 120, 130 and 140.....90&10%
Other Nos.....65%
Ames Sword Co. up to No. 150.....40%
Ames Sword Co. above No. 150.....50%
Slaymaker, Barry & Co.
No. 1010 line.....85&5%
No. 41 line.....45&10%
No. 61 line.....50&5%
No. 21 line.....75%

Sash, &c.—

Clark's No. 1, $10; No. 2, $8 ₩ gr.....33⅓%
Ferguson's.....33⅓%
Victor.....60&10&2%
Walker's.....10%
Attwell Mfg. Co.....25&33⅓%
Reading.....66⅔&10@66⅔&10&10%
Hammond's Window Springs.....40%
Common Sense, Jap'd, Cop'd and Br'zed.....₩ gr $4.00
Common Sense, Nickel Plated. ₩ gr $10.00
Universal.....30%
Kempshall's Gravity.....60%
Kempshall's Model.....60&60&10%
Corbin's Daisy, list Feb. 15, 1886.....70%
Payson's Perfect.....60&10&10%
Hugunin's Sash Balances.....25&5&2%
Hugunin's New Sash Locks.....25&5&2%
Stoddard's "Practical".....10%
Ives Patent.....60&10&5@60&10&10%
Fish (Liesche's pat.), No. 100, ₩ gr., $8; No. 105, ₩ gr., $10.....50%
Davis, Bronze, Barnes Mfg. Co.....70%
Champion Safety, list January, 1890..40%
Security.....70%
Giant, list Jan., 1892.....70&25%
Wolcott's.....60&10&5%
Monarch.....50%

Lumber Tools—

See *Tools, Lumber.*

Lustro—

Four-ounce bottles.....₩ doz, $1.75; ₩ gross.....$17.00

Machines.

Boring—

	Without Augers.	Upright.	Angular.
Douglas	$5.50	$6.75	50%
Snell's, Rice's Pat...	5.50	6.75	40&10&10%
Jennings'	5.50	6.75	45&45&10%
Other Machines..	2.35	2.75	
Phillips' Patent with Augur	7.00	7.50	
Miller's, Falls	7.50		25%

Fluting—

Knox, 4½-inch Rolls.....$3.25 each } 35%
Knox, 6-inch Rolls.....$3.60 each }
Eagle, 3½-inch Rolls, $2.15.....35%
Eagle, 5½-inch Rolls, $2.85.....35%
Crown, 4½ in., $3.50; 6 in., $4.00; 8 in., $6.50 each.....35%
Crown Jewel, 6 in.....$3.50 each, 35%
American, 5 in., $3.00; 6 in., $3.40; 7 in., $4.50 each.....35%
Domestic Fluter.....each, $1.50
Geneva Hand Fluter, White Metal, ₩ doz $12, 25%
Crown Hand Fluter, Nos. 1, $15.00; 2, $12.50; 3, $10.00.....30%
Shepard Hand Fluter, No. 85, per doz $15.30.....40%
Shepard Hand Fluter, No. 110, ₩ doz $11.00.....40%
Shepard Hand Fluter No. 95, ₩ doz $8.00.....40%
Clark's Hand Fluter, ₩ doz $15.00....35%
Combined Fluter and Sad Iron. ₩ doz $15.00.....30%
Buffalo, ₩ doz $10.00.....10%

Hoisting—

Moore's Hand Hoist, with Lock Brake.20%
Moore's Differential Pulley Block.....40%
Energy's Mfg. Co.'s.....25%
Sure Grip Steel Tackle Blocks.....25%

Washing—

Anthony Wayne, ₩ doz, No. 1, $51; No. 2, $45; No. 3, $42.
Western Star, ₩ doz, No. 2, $45; No. 2 $48.
Weisell.....₩ doz $54.00
Fair and Square.....₩ doz $42.00

Mallets—

Hickory.....20&10@20&10&10%
Lignumvitæ.....20&10@20&10&10%
B. & L. Block Co., Hickory & L. V. 30@30&10%

Mattocks—Regular list, 60&10@60&10&5%

Measures—

Standard Fiberware, No. 1, peck ₩ dozen, $4; ½-peck, $3.50.

Meat Cutters—

See *Cutters, Meat.*

Menders, Harness—

Per doz.....$2.00

Mills—

Coffee—

Box and Side, List Jan. 1, 1888.60@60&10%
Net prices are often made which are lower than above discount.
American, Enterprise Mfg. Co.....30%
The Swift, Lane Bros.....30%

Mincing Knives—

See *Knives, Mincing.*

Molasses Gates—

See *Gates, Molasses.*

Money Drawers—

See *Drawers, Money.*

Mowers, Lawn—

Philadelphia.....60&10%
Pennsylvania and Continental.....60%
New Model and Excelsior.....60@60&10%
Other Machines.....60&10&10@75%

Muzzles—

Safety.....₩ doz, $3.00, 25%

Nails.—

Cut and Wire. See Trade Report.
Wire Nails, Papered.
Association list, May 1, '92.80&10&10&5%
Tack Mfrs.' list.....70&5@70&10%
Hungarian, Finishing, &c. See *Tacks.*

Horse—

	Nos. 6	7	8	9	10	
American	8¾	8¾	8¾	8¾	8¾	.net
Ausable	28¢	26¢	25¢	24¢	23¢	40&5&5&2%
Clinton, Fin.	19¢	17¢	16¢	15¢	14¢	.30&10%
Essex	28¢	26¢	25¢	24¢	23¢	40&10&5@50&5%
Lyra	19¢	17¢	16¢	15¢	14¢	.40&10%
Snowden	19¢	17¢	16¢	15¢	14¢	.40&10%
Vulcan	23¢	21¢	20¢	19¢	18¢	...25%
Northwest'n.	25¢	23¢	22¢	21¢	20¢	25@25&5%
A. C.	25¢	23¢	22¢	21¢	21¢	25&10@33⅓&5%
C. B. K.	25¢	23¢	22¢	21¢	21¢	33⅓@33⅓&10%
Maud S.	25¢	23¢	22¢	21¢	21¢	40&10&5%
Champlain	28¢	26¢	25¢	24¢	23¢	40&5&5&2%
Saranac	23¢	21¢	20¢	19¢	18¢	.40&5%
Champion	25¢	23¢	22¢	21¢	20¢	10&10&10%
Capewell	19¢	18¢	17¢	16¢	16¢	..10&5%
Anchor	23¢	21¢	20¢	19¢	18¢	.35%
Western	23¢	21¢	20¢	19¢	18¢	.50%
Empire Bronzed						.13@14 ₩ ℔

Picture—

Brass Head, Sargent's list.....60@60&10%
Brass Head, Combination list.....50&10%
Porcelain Head, Sargent's list.50&10&10%
Porcelain Head, Combination list.40&10%
Niles' Patent.....40%

Nail Pullers—See *Pullers, Nail.*

Nail Sets—See *Sets, Nail.*

Nut Crackers—

See *Crackers, Nut.*

Nuts—List Dec. 18, 1889.

	Square.	Hex.
Hot Pressed	5.40¢	6.00¢ off list
Cold Punched	6.00¢	5.10¢ off list

In packages of 100 ℔, add 1-10¢ ₩ ℔, net; in packages less than 100 ℔, add ½¢ ₩ ℔, net.

Oakum—

Best or Government.....₩ ℔ 6¾@7¼¢
U. S. Navy.....₩ ℔ 5¾@6¢
Navy.....₩ ℔ 5¢@5¼¢

Oilers—

Zinc and Tin.....65&10@70&5%
Brass and Copper.....50&10@50&10&5%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4.00; No. 3, $4.40 ₩ doz. 10@10&5%
Malleable, Hammers' Old Pattern, same list.....45%
Prior's Pat. or "Paragon" Zinc. 60&10&10%
Prior's Pat. or "Paragon" Brass.....50%
Olmstead's Tin and Zinc.....60%
Olmstead's Brass and Copper.....50%
Broughton's Zinc.....60%
Broughton's Brass.....50%
Gem, P., D. & Co.....₩ gro. $3
Steel, Draper & Williams.....50%

Openers, Can—

Messenger's Comet.....₩ doz $3.00, 25%
American.....₩ gross $2.75@$3.00
Dupiex.....₩ doz 25¢, 15@20%
Lyman's.....₩ doz $3.75, 20%
No. 4, French.....₩ doz $2.25, 55@60%
No. 5, Iron Handle.....₩ gr $6.00, 45@50%
Eureka.....₩ doz $2.50, 10%
Sardine Scissors.....₩ doz $2.75@3.00
Star.....₩ doz $2.75
Sprague, No. 1, $2.00; 2, $2.25; 3, $2.50; 60¾@70%
Excelsior, No. 1 $2.50; No. 2, $1.50....40%
World's Best, ₩ gross, No. 1, $12.00; No. 2, $24.00; No. 3, $36.00.....50&10%
Universal, ₩ doz $3.00.....55&5%
Domestic, ₩ doz $2.00.....45%
Champion, ₩ doz $2.00.....50%

Packing, Steam—

Rubber—

Standard.....70&70&10%
Extra.....60@60&5%
N. Y. B. & P. Co., Standard.....50%
N. Y. B. & P. Co., Empire.....60%
N. Y. B. & P. Co., Salamander.....25%
Jenkins' Standard, ₩ ℔ 80¢....25@25&5%

Miscellaneous—

American Packing.....10¢@11¢ ₩ ℔
Russia Packing.....14¢ ₩ ℔
Italian Packing.....13¢@14¢ ₩ ℔
Cotton Packing.....15¢@17¢ ₩ ℔
Jute.....7¢@8¢ ₩ ℔

Pails—

Galvanized—

	Quarts	10	12	14
Hill's Light Weight,	₩ doz.	$2.75	3.00	3.25
Hill's Heavy Weight,	₩ dz.	3.00	3.25	3.75
Heiwig's		2.50	2.75	3.00
Sidney Shepard & Co.		2.35	2.85	3.05
Iron Clad		2.50	2.75	3.00
Fire Buckets		2.75	3.25	3.50

Buckets—See Well Buckets.

Indurated Fiber Ware—25%

Star Pails, 12 qt.....₩ doz $5.40
Stable and Milk, 14 qt.....₩ doz $6.00
Fire Pails, deep.....₩ doz $5.40
Fire Pails, round bottom.....₩ doz $7.80

Standard Fiber Ware—

	Plain.	Deer'd
Water Pails, 12 qt., ₩ doz.	$4.00	$4.50
Dairy Pails, 14 qt., ₩ doz.	4.50	5.00
Fire Pails, No. 1, 12 qt., ₩ doz	4.50	
Fire Pails, No. 2, 14 qt., ₩ doz	5.00	
Sugar Pails	6.00	6.50
Horse Pails	5.00	
Buggy Pails	4.00	
Slop Jars (bal. trap)	8.00	9.00
Chamber Pails, 14 qt.	6.50	7.50

Pans—

Dripping—

Small sizes.....₩ ℔ 6¼¢
Large sizes.....₩ ℔ 5¾¢
Silver & Co. (Covered).....40%

Fry—

Standard List:

No.	0	1	2	3	4
₩ doz.	$3.00	$3.75	$4.25	4.75	$5.25
No.	5	6	7	8	
₩ doz.	$6.00	$7.00	$8.00	$9.00	

Polished, regular goods.....75@75&10%
Acme Fry Pans.....60%

Dust—

Steel Edge, No. 1.....₩ doz $1.75

Paper and Cloth—

Sand and Emery—

List April 19, 1886.....50&10@50&10&5%
Sibley's Emery and Crocus Cloth.....30%

Parers—

Apple—

Advance.....₩ doz $4.75
Baldwin.....₩ doz 5.25
Bonanza.....each 5.00
Daisy.....₩ doz 4.00
Dandy.....each 7.50
Eclipse.....₩ doz 4.25
Eureka, 1888.....each 16.00
Family Bay State.....₩ doz 12.00
Favorite.....₩ doz 5.00
Gold Medal.....₩ doz 4.00
Ideal.....₩ doz 4.00
Improved Bay State....₩ doz 27.00@30.00
Little Star.....₩ doz 4.50
Monarch.....₩ doz 13.50
New Lightning.....₩ doz 5.50
Oriole.....₩ doz 4.00
Penn.....₩ doz 4.00
Perfection.....₩ doz 4.00
Pomona.....₩ doz 4.00
Rocking Table.....₩ doz 6.00
Turn Table.....₩ doz 4.50
Victor.....₩ doz 13.50
Waverly.....₩ doz 4.00
White Mountain.....₩ doz 4.00
72.....₩ doz 4.25
78.....₩ doz 7.00

Potato—

White Mountain.....₩ doz $4.50
Antrim Combination.....₩ doz $5.50
Hoosier.....₩ doz $13.50
Saratoga.....₩ doz $5.50

Pencils—

Faber's Carpenters'.....high list 50%
Faber's Round Gilt.....₩ gro $5.25
Dixon's Lead.....₩ gro $4.50
Dixon's Lumber.....₩ gro $6.75
Dixon's Carpenters'.....10%

Picks—

Railroad or Adze Eye, 5 to 6, $12.00; 6 to 7, $13.00.....60&10@60&10&5%

Picture Nails—

See *Nails, Picture.*

Pinking Irons—

See *Irons, Pinking.*

Pins—

Bow—

Humason, Beckley & Co.'s.....60&10%
Sargent & Co.'s, $17 and $18.....60&10%
Peck, Stow & W. Co....50&10@50&10&5%

Curtain—

Silvered Glass.....net
White Enamel.....net

Escutcheon—

Iron, list Nov. 11, 1885..50&10@50&10&5%
Brass.....60@60&5%

Pipe, Wrought Iron—

List October 12, 1892.

1¼ and under, Plain.....55&5@55&10%
1¼ and under, Galv.....45&5@45&10%
1½ and over, Plain.....65&5@65&10%
1½ and over, Galv.....55&5@55&10%
Boiler Tubes, list Oct. 24, 1892.....65%
Casing, list Nov. 10, 1892.....52½%
Inserted Joints Casing, list Nov. 16, 1892.....47½%
Steel Boiler Tubes.....27½%
Cold Drawn Seamless Steel Tubing...50%

Planes and Plane Irons—

Wood Planes—

Molding.....40&2%
Bench, First quality.....45&2%
Bench, Second quality.....50&2%
Bailey's (Stanley R. & L. Co.).....50&10%

Iron Planes—

Bailey's (Stanley R. & L. Co.).....50&10%
Miscellaneous Planes (Stanley R. & L. Co.).....25&10%
Steers' Iron Planes.....40&10%
Meriden Mal. Iron Co.'s.....40@40&10%
Davis' Iron Planes.....40@40&10%
Birmingham Plane Co.....50&50&10%
Gage Tool Co.'s Self-Setting...20&10&10%
Chaplin's Iron Planes.....40@40&10%
Sargent's.....60%
Standard Tool Co.....50@50&5%

Plane Irons—

Butcher's.....$5.00@$5.25 to 2
Buck Bros.....30%
Auburn Thistle, Ohio, Sandusky } .....30&10%
L. & I. J. White.....25%
Stanley R. & L. Co.....50&10%

Plates—

Felloe.....₩ ℔ 6¢@6½¢

Pliers and Nippers—

Button's Patent.....60%
Hall's No. 2, 5 in., $13.50; No. 4, 7 in., $21.00 ₩ doz.....40%
Humason & Beckley Mfg. Co..50@50&10%
Lindsay's Giant.....33⅓%
Gas Pliers.....60%
Gas Pliers, Custar's Nickel Plated..60&5%
Eureka Pliers and Nippers.....40%
Russell's Parallel.....25%
P., S. & W. Cast Steel.....50%
P., S. & W. Tinners' Cutting Nippers, add 6%.....10%
Carew's Pat. Wire Cutters.....20%
Morrill's Parallel, ₩ doz, $12.00....30&5%
Cronk's 8 in., $15.00; 10 in., $21.00. 50@50&5%
Cronk's Button Pattern.....50&10@60%
Cronk's Carrier Pliers.....60@60&5%

Plumbs and Levels—

Regular List.....75&10@75&10&25%
Stanley's Duplex.....20&10%
Stanley's Handy.....20&10%
Disston's.....50%
Pocket Levels.....70&10@70&10&10%
Davis Iron Levels.....30%
Davis' Inclinometers.....10&10%

Poachers, Egg—

Buffalo Steam Egg Poachers, ₩ doz, No. 1, $6.00; No. 2, $9.00.....25%
Silver & Co., 6-Ring, ₩ doz, $4.00; 3-Ring.....$2.00

Pokes, Animal—

Bishop's I. X. L.....₩ doz $6.00
Bishop's O. K.....₩ doz $5.25
Bishop's Pioneer.....₩ doz $3.75
Bishop's American.....₩ doz $2.75
Eagle, Double Stale.....₩ doz $5.75
Eagle, Single Stale.....₩ doz $3.75
Buckeye, Single Stale.....₩ doz $2.75
Bolding.....₩ doz $6.00
Metallic Horse Poke.....₩ doz., $6.00

Police Goods—

R. I. Tool Co., Handcuffs, $15.00 ₩ doz 10%
R. I. Tool Co., Leg Irons, $25.00 ₩ doz 10%
Tower's.....25%
Daley's Improved Handcuffs; 2 Hands, Polished, ₩ doz, $48.00; Nickeled, $57.00; 3 hands, Polished, ₩ doz, $72.00; Nickeled, $84.00.....25%
J. P. Lovell's Police Goods.....25%

Polish—

Metal—

Prestoline.....30%
Prestoline Paste.....33⅓%
Gaston's Silver Compound.....33⅓%

Stove—

Joseph Dixon's.....₩ gro, $6.00, 10%
Gem.....₩ gro, $4.50, 10%
Gold Medal.....₩ gro, $6.00, 25%
Lustro.....₩ gro, $4.75
Ruby.....₩ gro, $3.75
Rising Sun, 5 gro lots.....₩ gro $5.50
Dixon's Plumbago.....₩ ℔ 8¢
Boynton's Noon Day.....₩ gro $13.00
Parlor Pride Stove Enamel, ₩ gro
Yates' Liquid, 2 gal...$0.80, 3 gal...70, 5 gal...60, 10 gal...50
Yates Standard Paste Polish, 10 ℔ cans, ₩ ℔ 12½¢
Jet Black.....₩ gro $3.50
Japanese.....₩ gro $3.50
Fireside.....₩ gro $2.50
Diamond O. K. Enamel.....₩ gro $19.00
Bonnell's Liquid Stove Polish, ₩ gro $9.00
Bonnell's Paste Stove Polish, ₩ gro $6.00
Black Eagle Benzine Paste, 5 and 10 ℔ cans.....12½¢
Black Jack Water Paste, 5 and 10 ℔ cans.....12½¢
Nickel Plate Paste.....₩ gro $6.00
Crown Paste.....₩ gro $7.20
Crown Paste in 5 and 10 ℔ pails, ₩ ℔ 12¢
Black Flag.....₩ gro $7.20
Black Flag, 5 and 10 ℔ pails.....₩ ℔ 12¢
Black Flag, liquid, in bottles, ₩ gro $8.00
Diamond Rock Nickel Cleaner. ₩ gro $10.20
Raven Paste:
5-lb. pails, (per case of 6 or 12), ₩ ℔ 12¢
Less than case.....₩ ℔ 15¢
Liquid, 6 oz. bottles.....₩ gross, $8.00
Liquid, 8 oz. bottles.....₩ gross, $9.00
Water Polish.....₩ gross, $5.85

Poppers, Corn—

Round or Square, 1 qt..₩ gr $10.00@10.50
Round or Square, 1½ qt..₩ gr $15@$15.50
Round or Square, 2 qt..₩ gr $18.50@19.00

Post Hole and Tree Augers and Diggers—

See *Diggers, Post Hole, &c.*

Potato Parers—

See *Parers, Potato.*

Pots—

Glue—

Tinned.....40&10@40&10&5%
Enameled.....40&10@40&10&5%
Family, Howe's "Eureka".....40%
Family, L. F. C.'s "Handy".....60%

Powder—

In Canisters—

Fine Sporting, 1 ℔ each.....$0.90
Duck, 1 ℔ each.....60
Rifle, 1 ℔ each.....30
Rifle, ½ ℔ each.....18
Rifle, ¼ ℔ each.....13

In Kegs—

Rifle, 25-℔ kegs.....$4.00
Rifle, 12½-℔ kegs.....2.25
Rifle, 6¼-℔ kegs.....1.25
Duck, 25-℔ kegs.....5.00
Duck, 12½-℔ kegs.....2.75
Duck 6¼ ℔ kegs.....1.50

Presses—
Fruit and Jelly—
Enterprise Mfg. Co. 30%
Henis ..... ₱ doz $3.50
Shepard's Queen City 40%
Silver & Co. ..... ₱ doz $2.75

Pruning Hooks and Shears—See *Shears.*

Pullers, Nail—
Scranton ..... ₱ doz., $18.00, 33⅓%
Curtis Hammer ..... ₱ doz., $9.00
Giant, No. 1 ..... ₱ doz., $18.00, 10%
Giant, No. 2 ..... ₱ doz., $15.00, 10%
Pelican ..... ₱ doz., $9.00, 25%
Eclipse ..... Each, $2.00, net
Economy ..... ₱ doz., $6.00

Pulleys—
Hot House, Awning, &c. ..... 66⅔@70%
Japanned Screw ..... 60&10&10%
Brass Screw 70%
Japanned Side ..... 60&10&10%
Japanned Clothes Line ..... 60&10%
Empire Sash Pulley ..... 55@60%
Moore's Sash, Anti-Friction 50%
Hay Fork, Solid Eye, $4.00; Swivel, $4.50 ..... 50&10&50&10&5%
Hay Fork, "Anti-Friction," 5 in. solid, $5.70 ..... 50%
Hay Fork, "F" Common and Patent Bushed 20%
Hay Fork, Tarbox Pat. Iron 20%
Hay Fork, Reed's Self-Lubricating 60%
Shade Rack 45%
Tackle Blocks—See Blocks.
Moore's Anti-Friction 5 in. Wheel, ₱ doz., $12.00 ..... 40%
Shepard's Acme, No. 35 ..... 60%
Shepard's Niagara, No. 26 ..... 60%

Pumps—
Cistern, Best Makers ..... 60@60&10%
Pitcher Spout, Best Makers ..... 67½@70%
Pitcher Spout, Cheaper G'ds ..... 75@75&10%

Punches—
Saddler's or Drive, good ..₱ doz., 60@65%
Bemis & Call Co.'s Cast Steel Drive ..... 50&5%
Bemis & Call Co.'s Springfield Socket ..... 50&5%
Spring, good quality ..₱ doz., $2.50@$2.60
Spring, Leach's Pat 15%
Bemis & Call Co.'s Spring and Check 40%
Solid Tinners', P., S. & W. Co., ₱ doz., $1.44 ..... 55%
Tinners' Hollow Punches, P., S. & W. Co. ..... 20&2%
Rice Hand Punches 15%
Avery's Revolving 40%
Avery's Sawset and Punch—See Sawsets

Rail—
Sliding Door, Wr't Brass ..₱ ᵬ, 35¢, 40%
Sliding Door, Bronzed Wr't Iron ..₱ ft., 7¢
Sliding Door, Iron, Painted ..₱ ft., 4¢, 40%
Barn Door, Light ..In. ¼ ⅜ ½
Per 100 feet $2.00 2.50 3.10, 10%
S. D. for N. E. Hangers
Small. Med. Large.
Per 100 feet ..... $3.15 2.70 3.25 Net
Terry's Steel Rail ..... ₱ ft., 4½¢
Victor Track Rail, 7¢ ₱ foot ..... 50&2%
Carrier, double braced, Steel Rail, ₱ foot ..... 3½@4¢
Moore's Wrought Iron 25%
Moody Steel Rail, ₱ ft., 5¢ 45%

Rakes—
Cast Steel, Association g'ds ..70@70&5&2%
Cast Steel, outside g'ds ..... 70@70&5&2%
Malleable ..... 70@70&5%
Gibbs' Lawn Rake ..... ₱ doz., $4.90
Gibbs' Canton Lawn Rake ..₱ doz., $3.75
Gibbs' Acme Lawn Rake ..₱ doz., $4.75
Gibbs' Favorite Lawn Rake ..₱ doz., $3.90
Gibbs' Crown Lawn Rake, No. 1 ..... ₱ doz., $4.90
Gibbs' Crown Lawn Rake, No. 2 ..... ₱ doz., $5.40
Oneida Lawn Rake ..... ₱ doz., $6.00
Fort Madison Prize Bow Brace and Peerless 65%
Fort Madison Steel Tooth Lawn Rake, $6.00 ..... 25%

Razors—
J. R. Torrey Razor Co 20%
Wostenholm and Butcher, $10 to $.... 10%
Jordan's AAAI, new list ..... Net
Jordan's Old Faithful, new list ..... Net
Galvanic ..... ₱ doz., $15.00
Electric Cutlery Co. ..... Net
Campbell Cutlery Co. 50%

Razor Strops—See *Strops, Razor.*

Rings and Ringers—
Bull Rings—
Union Nut Co. 55%
Sargent's ..... 75&10%
Hotchkiss' low list 30%
Humason, Beckley & Co.'s ..... 70&10%
Peck, Stow & W. Co.'s ..50&10&50&10&10%
Ellrich Hdw. Co., White Metal, low list. 50&50&10%
Hog—
Top of the Hill Ringers ..₱ doz $2.00
Top of the Hill Rings ..... ₱ doz $1.25
Hill's Improved Ringers ..₱ doz $1.25
Hill's Old Style Ringers ..₱ doz $1.12½
Hill's Tongs ..... ₱ doz $3.00
Hill's Rings ..... ₱ doz bxs $1.00
Perfect Rings ..... ₱ doz bxs $1.50
Perfect Ringers ..₱ doz $2.15@$2.25
Blair's Hog Ringers ..₱ doz $2.00
Blair's Hog Rings ..₱ doz 90¢@$1.00
Champion Ringers ..₱ doz $2.00
Champion Rings, Double ..₱ doz $2.25
Brown's Ringers ..₱ doz $2.00
Brown's Rings ..₱ doz $1.15@$1.25
Electric Hog Rings ..₱ doz boxes $1.50
Electric Hog Ringers ..₱ doz $2.00
Major Rings ..₱ doz $1.25
Major Ringers ..₱ doz $2.00

Rivets and Burrs—
Iron, list Nov. 17, '87 ..... 60&10%
Copper ..... 60&10%
Coppered Iron, Bettina Brand 40%

Rivet Sets—See *Sets.*

Rods—
Stair, Brass ..... 25@30%
Stair, Black Walnut ..... ₱ doz 40¢

Rollers—
Barn Door, Sargent's list ..... 60&10&10%
Acme Moore's Anti-Friction 55%
Union Barn Door Roller 70%
Thompson Mfg. Co.'s Lawn Rollers ..30%

Rope—The following prices are f.o.b., New York or factory, and are shaded ¼¢@½¢ on large lots; terms, 1½% for cash.
Manila, 7-16 in. diam. and larger ..₱ ᵬ 10 ¢
Manila ..... ⅜ in. ₱ ᵬ 10½¢
Manila ..... ¼ and 5-16 in. ₱ ᵬ 11 ¢
Manila, Tarred Rope ..... ₱ ᵬ 9½¢
Manila, Hay Rope ..... ₱ ᵬ 9½¢
Sisal ..... 7-16 inch and larger ₱ ᵬ 7½¢
Sisal ..... ⅜ in. ₱ ᵬ 7½¢
Sisal ..... ¼ and 5-16 in. ₱ ᵬ 8½¢
Sisal, Hay Rope ..... ₱ ᵬ 7½¢
Sisal, Tarred Rope ..... ₱ ᵬ 6½¢
Sisal, Medium Lath Yarn ..... ₱ ᵬ 6½¢
New Zealand ..7-16 in. & larger ₱ ᵬ 6½¢
New Zealand ..⅜ inch, ₱ ᵬ 7 ¢
New Zealand ..¼ and 5-16 inch, ₱ ᵬ 7½¢
New Zealand, Hay Rope ..... ₱ ᵬ 6½¢
New Zealand, Tarred Rope ..... ₱ ᵬ 6 ¢
Cotton Rope ..... ₱ ᵬ 15½@16¢
Jute Rope ..... ₱ ᵬ 6½@7¢

Wire—
List February, 1892. All kinds 45%

Rules—
Boxwood ..... 80&10&10%
Ivory ..... 50&10%
Starrett's Rules and Straight Edges, Steel ..... 25&10%

Sad Irons—See *Irons, Sad.*

Sand and Emery Paper and Cloth—See *Paper and Cloth.*

Sash Cord—See *Cord, Sash.*

Sash Locks—See *Locks, Sash.*

Sash Weights—See *Weights, Sash.*

Sausage Stuffers or Fillers—See *Stuffers or Fillers, Sausage.*

Saws—The following prices are generally cut by jobbers.
Disston's Circular ..... 45@45&5%
Disston's Cross Cut ..... 45@45&5%
Disston's Hand 25%
Woodrough & McParlin.
Hand, Panel and Rip ..... 30@30&5%
Narrow Champion Cross Cuts with Handles, ₱ foot ..... 18@20¢
Champion Thin Back Cross Cuts, ₱ foot ..... 26@28¢
Champion Extra Thin Back Cross Cuts, ₱ foot ..... 29@31¢
One Man Champion Cross Cuts, ₱ foot ..... 37@40¢
Wheeler, Madden & Clemson Mfg. Co.
Hand, Panel and Rip ..... 35@35&5%
Narrow Champion Cross Cuts with Handles, ₱ foot ..... 18@20¢
Champion Thin Back Cross Cuts, ₱ foot ..... 26@28¢
Champion Extra Thin Back Cross Cuts, ₱ foot ..... 29@31¢
One Man Champion Cross Cuts, ₱ ft.. 37@39¢
Atkins' Circular Shingle & Heading ..50%
Atkins' Silver Steel Diamond X Cuts ₱ foot 70¢
Atkins' Special Steel Dexter X Cuts ₱ foot 50¢
Atkins' Special Steel Diamond X Cuts ₱ foot 32¢
Atkins' Champion and Electric Tooth X cuts ..... ₱ foot 30¢
Atkins Hollow Back X Cuts ..₱ foot 20¢
Atkins' Mulay, Mill and Drag 40%
Atkins' One-Man Saw, with handles, ₱ foot 40¢
Peace Circular and Mill ..... 45@45&5%
Peace Hand Panel and Rip ..... 25@25&5%
Peace Cross Cuts ..... 45@45&5%
Richardson's Circular and Mill. 45@45&5%
Richardson's X Cuts ..... 45@45&5%
Richardson's Hand, &c. ..... 25@25&5%
C. E. Jennings & Co. Hand, Panel and Rip ..... 33⅓@33⅓&10%

Hack Saws—
Griffin's, complete ..... 40&10@50
Griffin's Hack Saw Blades ..... 40&10@50
Star Hack Saws and Blades 25%
Eureka and Crescent 25%

Scroll—
Lester, complete, $10.00 ..... 25%
Rogers, complete, $4.00 ..... 25%
Barnes' Builders' and Cab Makers' ..$15,25%
Barnes' Scroll Saw Blades 35%

Saw Frames—See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Scales—
Hatch, Counter, No. 171, good quality, ₱ doz $18.00@$19.00
Hatch, Tea, No. 161 ..₱ doz $6.50@$7.00
Union Platform, Plain ..... $2.10@2.20
Union Platform, Striped ..... $2.40@2.50
Chatillon's Grocers' Trip Scales 50%
Chatillon's Eureka 25%
Chatillon's Favorite 40%
Family, Turnbulls ..... 30@30&10
Riehle Bros.' Platform 40%

Scale Beams—See *Beams, Scale.*

Scissors, Fluting 45%

Scrapers—
Adjustable Box Scraper (S. R. & L. Co.) $6.00 ..... 30&10%
Box, 1 Handle ..... ₱ doz $2.25@$2.50
Box, 2 Handle ..... ₱ doz $3.00@$3.25
Defiance Box and Ship ..... 20&10%
Foot ..... 50&10&60%
Ship, Common ..... ₱ doz $3.50 net
Ship, R. I. Tool Co. 10%

Screen Window and Door Frames—See *Frames*

Screw Drivers—See *Drivers, Screw*

Screws—
Bench and Hand—
Bench, Iron ..... 55&10@55&10&10%
Bench, Wood, Beech ..... ₱ doz $2.25
Bench, Wood, Hickory ..... 20&10%
Hand, Wood ..... 25&10@25&10&5%
Hand, Grand Rapids, list 35%
Coach, Lag and Hand-Rail—
Lag, Blunt Point, list Jan. 1, 1890 ..75&10%
Coach and Lag, Gimlet Point, list Jan. 1, 1890 ..... 75@75&10%
Hand Rail, Sargent's ..... 70&10%
Hand Rail, H. & B. Mfg. Co. ..70&10@75%
Hand Rail, Am. Screw Co. 75%
Jack Screws—
Jack Screws, Millers Falls list. 50@50&10%
Jack Screws, P., S. & W 35%
Jack Screws, Sargent 70%
Jack Screws, Starrns' ..... 40@40&10%
Cork—
Humason & Beckley Mfg. Co. ..40&10@50%
Williamson's ..... 33⅓@33⅓&5%
Machine—
Flat Head Iron 65%
Round Head Iron 60%
Wood—
List January 1, 1891.
Flat Head Iron 70%
Round Head Iron 65%
Flat Head Brass 70%
Round Head Brass 65%
Flat Head Bronze 70%
Round Head, Bronze 65%
Extra 10 or 10 & 5% often given.
Rogers' Drive Screws 82½%

Scroll Saws—See *Saws, Scroll.*

Scythes—
Grain ..... 40&5@40&10%
Grass ..... 40&10&50%

Scythe Snaths—See *Snaths, Scythe.*

Sets—
Awl and Tool—
Aiken's Sets, Awls and Tools, No. 20, ₱ doz $10.00 ..... 60@60&5%
Fray's Adj. Tool Hdls., Nos. 1, $12; 2, $18; 3, $12; 4, $9 ..... 45%
Millers Falls Adj. Tool Hdls., Nos. 1, $12; 2, $18 ..... 25%
Henry's Combination Haft ..₱ doz $6.50
Stanley's Excelsior: No. 1, $7.50; No. 2, $4.00; No. 3, $5.50 ..... 30&10%
Common Brad Sets, No. 42, $10.50; No. 43, $12.50 ..70&10&5%
Nail—
Square ..... ₱ gr. $4.00@$4.25
Round ..... ₱ gr. $3.25
Buck Bros. 27½%
Cannon's Diamond Point ..₱ gr. $12, 20%
Rivet—
Regular list 70%
Saw—
Stillman's Genuine ..₱ doz $5.00@7.75, 40&5%
Stillman's Pattern, Hand, ₱ doz $3.25; Cross Cut, $5.25 ..... 55%
Common Lever ..₱ doz $2.00, 45@50%
Morrill's No. 1, $15.00 ..... 40&20%
No. 11, $15.00 ..... 40&10@40&10&5%
Nos. 3 and 4, $18.00 ..... 40&5%
No. 5, $24.00 ..... 40&5%
Leach's ..No. 0, $8.00; No. 1, $15 ..15@20%
Nash's ..... 20&10@20&10&10
Hammer, Hotchkiss $5.50, 10%
Hammer, Bemis & Call Co.'s new Pat., 30&5%
Bemis & Call Co.'s Lever and Spring Hammer ..... 30&5%
Bemis & Call Co.'s Plate 10%
Bemis & Call Co.'s Cross Cut 12½%
Aiken's Genuine ..... $13.00, 50&10@00%
Aiken's Imitation ..... $7.00, 55&5%
Hart's Pat. Lever 20%
Disston's Star 25%
Leopold ..... 40&10@50%
Atkin's Lever ..₱ doz No. 1, $6.00
Atkin's Criterion ..₱ doz No. 1, $6.00
Croissant (Keller), No. 1, $15.00; No. 2, $24.00 ..... 40&10%
Avery's Saw Set and Punch 50%
Kohler's Royal ..₱ doz $7.00
Kohler's Giant Royal ..₱ doz $12.00
Crescent ..₱ doz $3.00
Lloyd's Acme ..₱ doz $15, 40&10%
Taintor Positive ..₱ doz $18, 50%

Sharpeners, Knife—
Larkins'.
Applewood Handles ..₱ doz. $6.00, 40%
Rosewood or Cocobola. ₱ doz. $9.00 40%

Shaves, Spoke—
Iron 45%
Wood 30%
Bailey's (Stanley R. & L. Co.) ..... 40&10%
Stearns' ..... 30&10%
Cincinnati ..... 25&10%
Goodell's ₱ doz. $9.00 ..... 25%

Shears—
American (Cast) Iron ..75&10@75&10&5%
Barnard's Lamp Trimmers ..₱ doz. $3.75
Seymour's, List Dec. 1881. 60&10&10@60&10&10&5%
Heinisch's, List Dec. 1881. 60&10&10@60&10&10&5
Heinisch's Tailor's Shears 33⅓%
Cast Steel Trimmers:
First quality ..... 80@80&10%
Second quality ..... 80&10@80&10&10%
Acme Cast Shears ..... 10&10%
Diamond Cast Shears 10%
Clipper ..... 10&10%
Victor Cast Shears ..... 75&10@75&10&5%
Howe Bros. & Hulbert, Solid Forged Steel 40%
Chicago Drop Forge & F. Co, Solid Steel Forged 60%
Davenport Cutlery Co. ..... 60@60&10%
Clauss Shear Co., Japanned 70%
Clauss Shear Co., Nickeled, same list. 60%
Galvanic 3½ to 9 in., ₱ doz. $1.00 ₱ inch
Electric Cutlery Co ..... Net
Campbell Cutlery Co., Jap'd 75%
Nickel Plated 65%

Pruning Shears and Hooks
Disston's Combined Pruning Hook and Saw ..... ₱ doz. $18.00, 20&10%
Disston's Pruning Hook, ₱ doz. $12.00 20&10%
E. S. Lee & Co.'s Pruning Tools ..50@60%
Pruning Shears, Henry's Pat., ₱ doz. $3.75@$4.00
Henry's Pruning Shears, ₱ doz. $4.25 @$4.50
Wheeler, M. & C. Co., Combination, ₱ doz $12.00, 20%
Dunlap's Saw and Chisel, ₱ doz $8.50, 30%
J. Mallinson & Co., No. 1, $5.25; No. 2, $7.25
P., S. & W. Co. 60%

Tinners', &c.—
Shears and Snips (P. S. & W.) ..... 20@25%
Snips, J. Mallinson & Co. 33⅓%

Sheaves—
Sliding Door—
M. W. Co., list July, 1888 ...50&10@60&5%
R. & E., list Dec. 18, 1885 ..... 55&20%
Corbin's list ..... 60&10&2%
Patent Roller ..... 60&10&2%
Patent Roller, Hatfield's 75%
Russell's Anti-Friction, list Dec. 18, 1885 ..... 60&2%
Moore's Anti-Friction 50%
Sliding Shutter—
R. & E., list Dec. 18, 1885 ..... 60&10&2%
Sargent's list 70%
Reading list ..... 60&10&10%

Shells—
First quality 4, 8, 10 and 12 gauge 25&10&2%
First quality Rival, Club and Climax brands, 14, 16 and 20 gauge ($7.50 list) ..... 20&10&2%
Prize ..... 40&2%
Star, Club, Rival and Climax Brands ..... 33⅓&10&2%
Smokeless brand, 12, 10, 16 gauge. 33⅓&10&2%
Trap brand, 12 and 10 gauge ..33⅓&10&2%
Selbold's Comb. Shot Shells ..... 15&2%
Brass Shot Shells, 1st quality ..... 60&2%
Brass Shot Shells, Club, Rival, Climax. 65&2%
Shells, Loaded—
Standard List, July 19, 1890 ..... 40&10&10@40&10&10&2%
Ship Tools—
L. & I. J. White ..... 20&5%
Shoes, Horse, Mule, &c.—
Horse—
Burden's, Perkins', Phœnix, Standard, Diamond, State and Bryden's Boss, at factory $4.00
Bryden's Frog Pressure, at factory ..$5.00
Mule—
Add $1 ₱ keg to above prices.
Ox Wrought—
Ton lots ..... ₱ ᵬ 9¢
1000 ᵬ lots ..... ₱ ᵬ 9½¢
500 ᵬ lots ..... ₱ ᵬ 10¢
Shot—
Small lots.
Drop, up to B, 25-ᵬ bag ... $1.45
Drop, up to B, 5-ᵬ bag .... .35
Drop, B and larger, 25-ᵬ bag 1 70
Drop, B and larger, 5-ᵬ bag ..... .40
Buck and Chilled, 25-ᵬ bag 1 70
Buck and Chilled, 5-ᵬ bag .40
Dust Shot, 25-ᵬ bag 2 00
Dust Shot, 5-ᵬ bag ..... .45
In ton lots a discount of 5¢ ₱ bag (25 ᵬ) is made.

Shovels and Spades—
Ames' Shovels, Spades, &c., list Nov. 1, 1885 ..... 30%
NOTE.—Jobbers frequenly give 5@7½% extra on above.
Griffith's Black Iron ..... 50&10%
Griffith's C. S. ..... 60@60&10%
Griffith's Solid C. S. R. R. Goods 20%
St. Louis Shovel Co. ..... 20@20@7½%
Hussey, Binns & Co. ..... 15@25%
Hubbard & Co. ..... 20@20@7½%
Lehigh Mfg. Co. ..... 50&10%
H. M. Myers Co. 30%
Payne Pettebone & Son ..... 33⅓&5%
Remington's (Lowman's Pat.) 30&10@40%
Rowland's Black Iron ..... 50&10%
Rowland's Steel ..... 60&5@60&10%
Terra Haute Shovel & Tool Co. 25%
Shovels and Tongs—
Iron Head ..... 60&10@60&10&5%
Brass Head ..... 60@60&10%
Sieves—
Mann's Tin Rim ..... 50&25%
Buffalo Metallic, S. S. & Co. ..... 50&25%
Shaker (Barler's Pat.) Flour Sifters ₱ gr $18.00@$20.00
Electric ..... ₱ gr $17.00@$20.00
A. & W. Sifters ..... ₱ gr $18.00@$20.00
Hunter's ..... ₱ gr $18.00@$20.00
Sieves, Wooden Rim—
	Iron	Plated.
Mesh 18, Nested, ₱ doz.	$0.80	$1.00
Mesh 20, Nested, ₱ doz.	.95	1.10
Mesh 24, Nested, ₱ doz.	1.15	1.32

Sinks, Wrought Steel—
Columbus, Painted or Unpainted ..... 30@30&10%
Columbus, Galvanized and Enameled. 10@50&10%
New Era, Painted ..... 40&10@50&5%
New Era, Galvanized and Enameled ... 60&10&10@70&5%
Skeins, Thimble—
Western list ..... 75&5@75&10%
Columbus Wrt. Steel ..Special net prices
Coldbrookdale Iron Co. 60%
Seneca Falls Pattern 60%
Utica P. S. T. Skeins 60%
Utica Turned and Fitted 30%
Slates—
School, by case ..... 50&10@50&10&10%
Sleds, Hand—
Tubular Steel ..... ₱ doz $24.00 40&5%
(Lots of 6 doz 50%)

Snaps, Harness, &c.—

Anchor (T. & S. Mfg. Co.).....65%
Fitch's (Bristol).....50&10%
Hotchkiss.....10%
Andrews.....50%
Sargent's Patent Guarded.....70&10&10%
German, new list.....40&10%
Covert.....50&10&5&2%
Covert, New Patent.....50&10&5&2%
Covert, New R. E.....60&10&5&2%
Covered Spring.....60&10&10%
Covert's Saddlery Works' Triumph 33⅓&
John Prott Snaps.....75@75&5%

Snaths, Scythe—

List.....50@50&5%

Soldering Irons—

See *Irons, Soldering.*

Spittoons, Cuspidors, &c.

Standard Fiberware—

Cuspidors, 8¼ inch, ₱ doz., No. 5, $8; No. 5X, $9.
Spittoons, Daisy, 8-inch, No. 1, 4; 10 and 11 inch, $6.

Spoke Shaves—

See *Shaves, Spoke.*

Spoke Trimmers—

See *Trimmers, Spoke.*

Spoons and Forks—

Tinned Iron—

Basting, Cen. Stamp. Co.'s list.....70&10%
Solid Table and Tea, Cen. Stamp. Co.'s list.....70&10%
Buffalo, S. S. & Co.....33⅓&2%

Silver Plated—

months or 5% cash 30 days:
Meriden Brit. Co., Rogers.....40&15%
C. Rogers & Bros.....40&15%
Rogers & Bros.....40&15%
Reed & Barton.....40@40&5%
Wm. Rogers Mfg. Co.....40, 15&5%
Simpson, Hall, Miller & Co.....40, 15&5%
Holmes & Edwards Silver Co.....40, 15&5%
L. Boardman & Son.....50&12½%

Miscellaneous—

Holmes & Edwards Silver Co.:
No. 67 Mexican Silver.....50&10&5%
No. 30 Silver Metal.....50&10&5%
No. 24 German Silver.....50&10&5%
No. 50 Nickel Silver.....50&5%
No. 49 Nickel Silver.....50&10&5%

Wm. Rogers Mfg. Co.:
Rogers' Silver Metal.....50&10&6%
18% Rogers' German Silver.....60&6%
22% Rogers' Nickel Silver.....50&6%
German Silver.....50@50&5%
German Silver, Hall & Elton..50&5% cash
Nickel Silver.....50&5@50&10&5% cash
Brittannia.....60@60&5%
Boardman's Nickel Silver, list July 1, 1891.....60&7½&5%
Boardman's Brittannia Spoons, case lots.....60&5% cash

Springs—

Door—

Torrey's Rod, 39 in.....₱ doz $1.20@1.25
Gray's, ₱ gr. $20.00.....25%
Bee Rod, ₱ gr., $20.00.....20@25%
Warner's No. 1, ₱ doz $1.50; No. 2, $3.40.....55@55&10%
Gem (Coil), list April 19, 1886.....10@15%
Star (Coil), list April 19, 1886...20@20@5%
Victor (Coil).....60&10@60&10&5%
Champion (Coil).....60&10@60&10&10%
Cowell's, No. 1, ₱ doz $18.00; No. 2, $15.00.....50@50&10%
Rubber, complete, ₱ doz $4.50.....55&10%
Hercules.....50@50&10%

Carriage, Wagon, &c.—

Elliptic, Concord, Platform and Half Scroll.....60&10&10%
Cliff's Bolster Springs.....25%

Squares—

Steel and Iron.....
Nickel-Plated.....} .....85@85&5%

Try Square and T Bevels.....60&10&10%
Disston's Try Square and T Bevels....50%
Winterbottom's Try and Miter....30&10%
Starrett's Micrometer Caliper Squares.....25%
Avery's Flush Bevel Squares.....40%
Avery's Bevel Protractor.....50%

Squeezers—

Fodder—

Blair's.....₱ doz $2.00
Blair's "Climax".....₱ doz $1.25

Lemon—

Porcelain Lined, No. 1....₱ doz $6.00 25&30%
Wood, No. 2.....₱ doz $3.00, 35%
Wood, Common.....₱ doz $1.70@1.75
Dunlap's Improved.....₱ doz $3.75, 20%
Bammis....No. 1, $5.00; No. 2, $9; 12, $18 ₱ doz.....25&10%
Jennings' Star.....₱ doz $2.50
The Boss.....₱ doz $2.50
Dean's..Nos. 1, ₱ doz $6.50; 2, $3.35; 3, $1.90; Queen, $2.50
Little Giant.....50@50&5%
King.....40&5%
Hotchkiss Straight Flash....₱ doz $12.00
Silver & Co., Glass.....₱ gro. $9.00
Manny Lemon Juice Extractor:
Standard.....₱ doz $0.75@$1.00
Improved.....₱ doz $2.00

Standard Fiber Ware—

See *Ware, Standard Fiber.*

Staples—

Blind—

Barbed, ¼ in. and larger....₱ ℔ 7@7¼¢
Barbed, ¾ in.....₱ ℔ 8@8½¢
Fence Staples, Galvanized. } Same price as B'rb Wire
Fence Staples Plain..... } See Trd. Rep

Steelyards 40&10@50%

Stocks and Dies—

Blacksmith's:
Waterford Goods.....35%
Butterfield's Goods.....35%
Lightning Screw Plate.....25@30%
Reece's New Screw Plates.....25@30%
Reversible Ratchet.....30%
Gardner.....25%
Green River.....25@30%

Stops, Bench—

Morrill's.....₱ doz $9, 50%
Hotchkiss's.....₱ doz $5, 10@10&10%
Weston's, No. 1, $10; No. 2, $9, 25&10&5%
McGill's, ₱ doz $3.....10%
Cincinnati.....25&10%
Terrell's Nos. 1 and 2, ₱ doz., $5; No. 3, $3.60.....30%

Stone—

Stones, Grind—See *Grindstones.*

Scythe Stones—

Pike Mfg. Co., list April, 1892.....33⅓%
Cleveland Stone Co., list Nov. 1892..33⅓%

Oil Stones, &c.—

Pike Mfg. Co:
Hindostan No. 1, ₱ ℔....8¢
Sand Stone.....5¢
Turkey Oil Stone, 4 to 8 in.....80¢ } 40@40& 10%
Turkey Slips.....$2.00
Washita Stone, Extra.....50¢
Washita Stone, No. 1.....40¢
Washita Stone, No. 2.....30¢
Washita Slips, Extra.....80¢
Washita Slips, No. 1.....70¢
Arkansas Stone, No. 1, 3 to 5½ in., $2.80
Arkansas Stone, No. 1 5½ to 8 in., $3.50
} 33⅓@33⅓&10%
Lake Superior.....₱ ℔ 13¢
Lake Superior Slips.....₱ ℔ 20¢

Stove Polish—

See *Polish, Stove.*

Stretchers Carpet—

Cast Steel, Polished.....₱ doz $2.2
Cast Iron, Steel Points.....₱ doz 75@80¢
Socket.....₱ doz $1.75
Bullard's.....25@25&10%

Strops, Razor—

Genuine Emerson.....60@60&5%
Imitation " .....₱ doz $2.00, 20&10&5%
Torrey's.....20%
Badger's Belt and Com.....₱ doz $2.00
Lamont Combination.....₱ doz $4.00
Jordan's Pat. Padded, list Nov. 1, '89, 50%
Electric Cutlery Co.....Net
Campbell Cutlery Co.....Net

Stuffer, Sausage—

Miles' Challenge, ₱ doz $20....50@50&5%
Perry....₱ doz, No. 1, $15.00; No. 0, $21.00.....50&5@50&10%
Draw Cut No. 4, each $30.00.....20%
Enterprise Mfg. Co.....30%
Silver's.....40&10%

Sweepers, Carpet and Lawn—

Carpet—

Bissell No. 5.....₱ doz $17.00
Bissell No. 8.....₱ doz $20.00
Bissell, Grand.....₱ doz $36.00
Standard.....₱ doz $24.00
Domestic.....₱ doz $21.00
Domestic, No. 2.....₱ doz $22.00
Grand Rapids.....₱ doz $24.00
Crown Jewel, No. 1, $18.00; No. 2, $19.00; No. 3, $20.00
Magic.....₱ doz $15.00
Improved Parlor Queen, Nickeled.....₱ doz $27.00
Japanned.....₱ doz $24.00
Excelsior.....₱ doz $22.00
Garland.....₱ doz $18.00
Parlor Queen.....₱ doz $24.00
Housewife's Delight.....₱ doz $15.00
Queen.....₱ doz $16.00
Queen, with band.....₱ doz $18.00
King.....₱ doz $30.00
Weed, Improved.....₱ doz $18.00
Hub.....₱ doz $16.00
Cog-Wheel.....₱ doz $16.00
Ladies' Friend.....₱ doz $15.00
Ladies' Friend No. 2.....₱ doz $16.00
Advance.....₱ doz $18.00
Our Leader.....₱ doz $19.00
Triumph.....₱ doz $20.00
Goshen.....₱ doz $21.00
Supreme.....₱ doz $22.00
Easy.....₱ doz $22.00
Gilt Edge.....₱ doz $24.00
Acme.....₱ doz $26.00
Imperial.....₱ doz $26.00
Grand Republic.....₱ doz $30.00
Banner.....₱ doz $22.00
The Star.....₱ doz $21.00
Reliable.....₱ doz $22.00
The Rapid.....₱ doz $22.00
Our Own.....₱ doz $27.00
Model.....₱ doz $27.00

Goshen Sweeper Company, Grand Rapids, Mich., make the following rebates:
5 dozen in 6 months.....₱ doz $1.00
10 dozen in 6 months.....₱ doz $2.00
25 dozen in 6 months.....₱ doz $3.00
Except on L.F., when 10 dozen price is $13.50, and 25 dozen $13.00.

Lawn—

Thompson Mfg. Co.....30%

Tacks, Brads &c.—

List October 19, 1889. Old established straight Weights. Short Weight goods are sold at lower prices.

Carpet Tacks—
American, Blued.....66⅔%
American, Tin'd and Cop'd.....70%
Steel, Bright and Blued.....66⅔%
Steel, Tinned and Coppered.....70%
Swedes Iron, Blued.....72½%
Swedes Iron, Tinned.....75%
American Iron Tacks, Domestic.66⅔%
Swedes Iron Tacks—
S. S., Blued.....66⅔%
S. S., Tinned.....70%
Lanc., Blued.....55%
Lanc., Tinned.....60%
Gimp and Lace Tacks—
S. S., Blued.....62½%
S. S., Tinned.....66⅔%
Lanc., Blued.....55%
Lanc., Tinned.....60%
Basket and Trimmers' Tacks—
Lanc.....52½%
S. S.....60%
Hungarian Nails.....60%
Common and Patent Brads.....55%
Leathered Tacks.....10%
Brush Tacks, S. S.....60%
Looking Glass Tacks, S. S.....35%
Picture-Frame Points, S. S.....35%
Finishing Nails.....60%
Trunk and Clout Nails—
Black.....62½%
Tinned or Coppered.....66⅔%
Basket Nails.....60%
Chair Nails.....52½%
Cigar Box Nails.....45%
Tin Capped Nails.....50%

Extra discount 25&2%

Miscellaneous—

Double Point.....90@90&10%
Wire Carpet Nails.....50&10%
Plymouth Rock Steel Carget Tacks...25%
Upholsterers' Nails.....40%

Wire Brads and Nails—

Steel-Wire Brads, R. & E. Mfg. Co.'s list 50&10%

See also *Nails, Wire.*

Tapes, Measuring—

American.....40@40&5%
Spring.....40%
Chesterman's, Regular list.....25@30%

Thermometers—

Tin Case.....80@80&10%

Thimble Skeins—See *Skeins.*

Ties, Bale—Steel.

Standard Wire, list.....50&10&5%

Tinners' Shears, &c —

See *Shears, Tinners' &c.*

Tinware—

Stamped, Japanned and Pieced, list Jan 20, 1887.....70&10@70&25%

Tire Benders, Upsetters, &c.—See *Benders and Upsetters, Tire.*

Tobacco Cutters—

See *Cutters, Tobacco.*

Tools—

Coopers'—

Bradley's.....20%
Barton's.....20@20&5%
L. & I. J. White.....20&5%
Albertson Mfg. Co.....25%
Beatty's.....30%
Sandusky Tool Co.....30@30&5%
Shaves Cincinnati Tool Co.....20%

Lumber—

Ring Peavies, "Blue Line"..₱ doz $20.00
Ring Peavies, Common.....₱ doz $18.00
Steel Socket Peavies.....₱ doz $21.00
Mall. Iron Socket Peavies...₱ doz $19.00
Cant Hooks, "blue Line"....₱ doz $16.00
Cant Hooks, Common Finish..₱ doz $14.00
Cant Hooks, Mall. Socket Clasp, "Blue Line" Finish.....$16.00
Cant Hooks, Mall. Socket Clasp, Common Finish.....₱ doz $14.50
Cant Hooks, Clip Clasp, "Blue Line" Finish.....₱ doz $14.00
Cant Hooks, Clip Clasp, Common Finish.....₱ doz $12.00
Hand Spikes....₱ doz 6 ft., $15.00; 8 ft., $20.00
Pike Poles, Pike & Hook, ₱ doz, 12 ft., $11.50; 14 ft., $12.50; 16 ft., $14.50; 18 ft., $17.50; 20 ft., $21.50.
Pike Poles, Pike only, ₱ doz, 12 ft., $10.00; 14 ft., $11.00; 16 ft., $13.00; 18 ft., $16.00; 26 ft., $20.00.
Pike Poles, not ironed, ₱ doz, 12 ft., $6.00; 14 ft., $7.00; 16 ft., $9.00; 18 ft., $12.00; 20 ft., $16.00.
Setting Poles, ₱ doz, 12 ft., $14.00; 14 ft., $15.00; 16 ft., $17.00.
Swamp Hooks.....₱ doz $18.00

Saw—

Atkins' Perfection.....₱ doz $12.00
Atkins' Excelsior.....₱ doz $6.00
Atkins' Giant.....₱ doz $4.00

Transom Lifters—

See *Lifters, Transom.*

Traps—

Game—

Newhouse.....40@40&5%
Oneida Pattern.....70&10%
Game, Blake's Patent.....40&10&5%

Mouse and Rat—

Mouse Wood, Choker, ₱ doz holes, 9@10¢
Mouse, Round Wire.....₱ doz $1.50 10%
Mouse, Cage, Wire.....₱ doz $2.50 10%
Mouse, Catch-'em-alive..₱ doz $2.50 15%
Mouse, Bonanza.....₱ doz 0.90@$1.00
Rat, Decoy.....₱ gr $10.00, 10%
Ideal.....₱ gr $10.00
Cyclone.....₱ gr $5.25
Hotchkiss Metallic Mouse, 5-hole traps, ₱ doz., 75¢; in full cases, ₱ doz.60@65¢
Hotchkiss Imp. Rat Killer...₱ gro $18.50
Hotchkiss New Rat Killer...₱ gro $16.50
Schuyler's Rat Killer.....₱ gro $15.00
Dandy.....₱ doz., $1.75

Triers—

Butter and Cheese.....25%

Trimmers, Spoke—

Bonney's.....₱ doz $10.00, 50%
Stearns'.....20&10%
Ives', No. 1, $15.00; No. 2, $12.00 ₱ doz. 55&10%
Douglas'.....₱ doz $9.00, 20%
Cincinnati.....25%

Trowels—

Lothrop's Brick and Plastering, 20&10&5@35%
Reed's Brick and Plastering.....15%
Disston's Br'k and Plastering..25@25&5%
Peace's Plastering.....25@25&5%
Clement & Maynard's.....20@20&5%
Rose's Brick.....15@20%
Brade's Brick.....25%
Worrall's Brick and Plastering.....20%
Garden.....70%
Cleves' Angle Trowel, ₱ gro, No. 1, $36; No. 2, $30; No. 3, $15. net @ 10%

Trucks, Warehouse, &c.—

B. & L. Block Co.'s list.....40%
Thompson Mfg. Co.....25¢

Tubes, Boiler—

See Pipe.

Twine—

Flax Twine—

	BC.	B.
No. 9, ¼ and ⅛ ℔ Balls.....	25¢	31¢
No. 12, ¼ and ⅛ ℔ Balls.....	22¢	30¢
No. 18, ¼ and ⅛ ℔ Balls.....	20¢	29¢
No. 24, ¼ and ⅛ ℔ Balls.....	20¢	29¢
No. 36, ¼ and ⅛ ℔ Balls.....	18¢	28¢

No. 264 Mattrass, ¼ and ⅛ ℔ Balls, 52@54¢
Chalk Line, Cotton, ⅛ ℔ Balls.....25¢
Mason Line, Linen, ⅛ ℔ Balls.....55¢
2-Ply Hemp, ¼ and ⅛ ℔ Balls (Spring Twine).....15¼¢
3-Ply Hemp, 1 ℔ Balls.....16¢@16¼¢
3-Ply Hemp, 1¼ ℔ Balls.....15¢@15¼¢
Cotton Wrapping, 5 Balls to ℔..15¢@16¢
2, 3, 4 and 5 Ply Jute, ⅛ ℔ Balls.....10¢
Wool.....6½¢@6¾¢
Paper.....13¢@14¢
Cotton Mops, 6, 9, 12 and 15 ₱ to doz..18¢

Vises—

Solid Box.....50&10@50&10&5%

Parallel—

Fisher & Norris Double Screw.....15&10%
Stephens'.....25@30%
Parker's.....20@25%
Wilson's.....55%
Howard's.....40%
Bonney's.....50%
Milliers' Falls.....40@40&10%
Trenton.....40&5@40&10%
Merrill's.....15&20%
Sargent's.....70&10%
Backus and Union.....40%
Double Screw Leg.....15&10%
Prentiss.....20@25%
Simpson's Adjustable.....40%
Moore's.....20%
Massey Quick Action.....20@25%

Saw Filers—

Bonney's, Nos. 2 & 3, $15.00.....40&10%
Stearn's.....30⅓&10@33⅓&10&10%
Stearn's Silent Saw Vises.....33⅓@35%
Hopkins'.....₱ doz $17.50, 10%
Reading.....40&10%
Wentworth.....20&10%

Miscellaneous—

Combination Hand Vises.....₱ gr. $42.00
Cowell Hand Vises.....20%
Bauer's Pipe Vises.....10%
Cincinnati.....25&10%
Enterprise Pipe Vises, each.....$3.00
Massey Combination Pipe.....40%

Wads—Price Per M.

U.M.C.&W.R.A.—B. E., 11 up.. 68¢
U.M.C.&W.R.A.—B. E., 9&10.. 82¢
U.M.C.&W.R.A.—B. E., 8..... 96¢
U.M.C.&W.R.A.—B. E., 7.....$1.10
U.M.C.&W.R.A.—P. E., 11 up. 1.15
U.M.C.&W.R.A.—P. E., 9&10.. 1.50
U.M.C.&W.R.A.—P. E., 8..... 1.70
U.M.C.&W.R.A.—P. E., 7..... 1.80
} Dis. 20&2½%

Eley's B. E., 11 and larger....$1.70@$1.75
Eley's P. E., 12 to 20..... 3.00@ 3.25

Wagon Boxes—

See *Boxes, Wagon.*

Wagon Jacks—

See *Jacks, Wagon.*

Ware, Hollow—

Cast Iron, Hollow—

Stove Hollow Ware—
Ground.....60&10%
Unground.....60&10&10%
White Enameled Ware—
Maslin Kettles.....75@75&5%
Boilers and Saucepans.....60@60&5%
Tinned Boilers and S'pans.....60@60&5%
Rustless Hollow Ware.....60@50&5%
Gray Enameled Ware—
Stove.....50%
Maslin Kettles.....60&60&10%
Boilers and Saucepans.....40&5%

Enameled—

Agate and Granite Ware, list Jan. 1, 1889.....33⅓&10%
Ironclad Enameled Ware....dis 33⅓&10%

Kettles—

Galvanized Tea-Kettles—

Inch.....	6	7	8	9
Each....	55¢	60¢	65¢	75¢

Standard Fiber—

	Per Doz. Plain.	Decorated.
Wash-Basins, 10¼ in.....	$2.00	2.25
Wash-Basins, 12 in.....	2.25	.5
Keelers, 11¼ in.....		4.00
Cuspidors.....		8.00
Spittoons, "Daisy," 8 in.	4.00	4.50
Peck Measure.....	4.00	
Half-peck Measure.....	3.50	

See also Pails.

Indurated Fiber.—

Spittoons No. 2, ₱ doz.....$8.40
Basins, Ringed, ₱ doz., No. 2.....3.00
Washtubs, Nested, Nos. 0, 1, 2 and 3 (4 pieces), ₱ nest.....$7.50
Keelers Nested, Nos. 1, 2, 3 and 4 (4 pieces), ₱ nest.....$2.90
Butter Bowls 15, 17 and 19-inch (3 pieces), ₱ nest.....$1.70
Liquid Measures, pt., qt., 2 qt. and funnel (4 pieces), ₱ set.....$1.60
} 25%

See also Pails.

Silver Plated, Hollow—

4 mo. or 5% cash in 30 days.

Reed & Barton.....
Meriden Britannia Co.....
Simpson, Hall, Miller & Co.....
Rogers & Brother.....
} 40&25%

Hartford Silver Plate Co.....
William Rogers Mfg. Co.....
} 40&25&5%

Washers—
Size hole..... 5-16 ⅜ ½ ⅝ to 1⅛
Washers..... 5¼ 4½ 3¼ 2¾
In lots less than 200 ℔, ₩ ℔, add ¼¢, 5-℔ boxes 1¢ to list.

Washer Cutters—
See *Cutters, Washers.*

Wedges—
Iron.....₩ ℔ 3½¢
Steel.....₩ ℔ 3¾¢

Weights, Sash—
Solid Eyes.....₩ ton $18.00@$19.00

Well Buckets Galvanized—See *Buckets, Well, Galvanized.*

Wheels, Well—
8 in., $2.25; 10 in., $2.70; 12 in., $3.25

Wire and Wire Goods—

Iron—
Market,
Br. & Ann., Nos.0 to 18. 75&10@75&10&5%
Cop'd, Nos. 0 to 18. 75&5%
Galv., Nos. 0 to 18. 70&5@70&10%
Tin'd, Tin'd list, Nos. 0 to 18. .70@70&10%
} Extra 10% often given.

Stone,
Br. and Ann'd, Nos. 16 to 18.....80%
Bright and Ann'd, Nos. 19 to 26.....80&5%
Br. and Ann'd, Nos. 27 to 36.....82½&5%
Tinned.....
} Extra 10% often given.

Tinned Broom Wire, 18 to 21, ₩ ℔....4½¢
Galvanized Fence.....75&10%
Brass, list Jan. 18, 1884.....40%
Copper, list Jan. 18, 1884.....40@5%
Annealed Wire on Spools.....60%
Malin's Annealed and Tin'd on Spools.65%
Malin's Brass and Cop. on Spools....55%
Tate's Spooled, Tin'd & Annealed..60&5%
Tate's Spooled Cop. and Brass.....50%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$6.00 to 2, 30%
Steel Music Wire, 12 to 30, imported.... 60@70¢ ₩ ℔
Wire Clothes Line, see Lines.
Wire Picture Cord, see Cord.

Bright Wire Goods—
Standard list.....80&20@85%

Wire Cloth and Netting—
Painted Screen Cloth, good quality, ₩ 100 sq. ft., $1.40
Galvanized Wire Netting.....75@75&10%

Wire, Barb—
See Trade Report.

Wire Rope—See *Rope, Wire.*

Wrenches—
American Adjustable.....40%
Baxter's Adjustable "S".....40&10@50%
Baxter's Diagonal.....60%
Coes' Genuine.....50&3%
Coes' "Mechanics".....50&10&3%
Girard Standard.....65&10@70%
Lamson & Sessions' Engineers'....60&10%
Lamson & Sessions' Standard.....70&10%
P. S. & W. Agricultural.....
Girard Agricultural.....
Lamson & Sessions' Agric'l..
} 75&10@80%
Bemis & Call's:
Pat. Combination.....40%
Merrick's Pattern.....35%
Brigg s Pattern.....25%
Cylinder or Gas Pipe.....40&5%
No. 3 Pipe.....50%

Aiken's Pocket (Bright).....$6.00, 50&10%
The Favorite Pocket.....₩ doz., $4.00, 40%
Webster's Pat. Combination.....25%
Boardman's.....50%
Always Ready.....25&5%
Alligator.....50%
Donohue's Engineer.....20&10%
Acme, Bright.....50&3%
Acme, Nickeled.....40&3%
Hercules.....70&70&5%
Walker's.....55&3%
Diamond Steel.....55&3%
Cincinnati Brace Wrenches.....25&10%
Tafts' Vise Wrench.....55&10&3%

Wringers, Clothes—
Am. Wringer Co.'s list, Jan. 2, '93..2% cash
Colby WringerCo., listSept. 1, '91..2% cash
Lovell Mfg. Co., list Jan. 1, 1892..2% cash
Peerless Mfg. Co., list Feb., 1892..2% cash
National Wringer & Mfg. Co., list June 1, 1892.....2% cash

Wrought Goods—
Staples, Hooks, &c., list March 17, 1892 85&10@85&15%

Paints, Oils and Colors.—Wholesale Prices.

Animal and Vegetable Oils—

Linseed, City, raw.. per gal.	..	@	48
Linseed, City, boiled.....	..	@	51
Linseed, Western, raw.....	..	@	48
Lard, City, Extra Winter...	..	@	92
Lard, City, Prime.....	90	@	92
Lard, City, Extra No. 1.....	60	@	65
Lard, City, No. 1.....	45	@	50
Lard, Western, prime.....	88	@	90
Cotton-seed, Crude, prime..	43	@	44
Cotton-seed, Crude, off grades.....	40	@	42
Cotton-seed, Summer Yellow, prime.....	47	@	48
Cotton-seed, Summer Yellow, off grades.....	42	@	45
Sperm, Crude.....	..	@	77
Sperm, Natural Spring.....	70	@	72
Sperm, Bleached Spring....	75	@	77
Sperm, Natural Winter.....	76	@	78
Sperm, Bleached Winter....	80	@	82
Whale, Crude.....	40	@	43
Whale, Natural Winter.....	52	@	53
Whale, Bleached Winter....	55	@	56
Whale, Extra Bleached.....	57	@	58
Sea Elephant, Bleached Winter.....	..	@	..
Menhaden, Crude, Sound...	34	@	35
Menhaden, Crude, Southern	..	@	..
Menhaden, Light Pressed...	37	@	38
Menhaden, Bleached W'ter.	43	@	44
Menhaden, Extra Bleached.	45	@	..
Tallow, City, prime.....	50	@	55
Tallow, Western, prime....	45	@	50
Cocoanut, Ceylon.....	5½@		5¾
Cocoanut, Cochin.....	6	@	6¼
Cod, Domestic.....	38	@	40
Cod, Foreign.....	40	@	42
Red Elaine.....	38	@	45
Red Saponified..... ₩ ℔	5½@		..
Bank..... per gal	36	@	37
Straits.....	37	@	38
Olive, Italian, bbls.....	63	@	67
Neatsfoot, prime.....	55	@	60
Palm, prime, Lagos..... ₩ ℔	5¾@		6¼

Mineral Oils—

Black, 29 gravity, 25 @ 30 cold test.....per gal	7	@	7¼
Black, 29 gravity, 15 cold test.....	7¼@		8
Black, 29 gravity, summer..	6	@	6¼
Cylinder, light, filtered.....	14	@	16
Cylinder, dark, filtered.....	10	@	..
Paraffine, 23½@24 gravity..	11½@		12
Paraffine, 25 gravity.....	10	@	10¼
Paraffine, 28 gravity.....	7¾@		8
Paraffine, red.....	9	@	11¼

Paints and Colors—

Barytes, Foreign, ℔ ton..$22.00		@24.00	
Barytes, Amer. floated....29.00		@32.00	
Barytes, Amer. No. 1.....16.00		@18.00	
Barytes, Amer. No. 2.....13.00		@15.00	
Barytes, Amer. No. 3.....11.00		@12.00	
Blue, Celestial..... ₩ ℔	6	@	8
Blue, Chinese.....	40	@	50
Blue, Prussian.....	25	@	40
Blue, Ultramarine.....	8	@	25
Brown, Spanish.....	⅞	@	1
Brown, Vandyke, Amer...	3	@	3½
Brown, Vandyke, English.	6	@	8
Carmine, No. 40, in bulk..	3.10	@	..
Carmine, No. 40, in boxes or barrels.....	3.20	@	..
Carmine, No. 40, in ounce bottles.....	4.20	@	..
Chalk, in bulk..... ₩ ton..	....	@	1.75
Chalk, in bbls.. ₩ 100 ℔...	33	@	40
China Clay, English..... ₩ ton.13.00		@18.00	
Cobalt Oxide, prep'd.....	9.00	@11.00	
Cobalt Oxide, black..... lots 100 ℔.	1.90	@	....
Cobalt Oxide, black..... less 100 ℔.	1.96	@	....
Green, Paris, in bulk.....	10	@	10½
Green, Paris, 170 @ 175 ℔ kegs.....	10½@		11
Green, Paris, small pack.	12	@	17
Green, Chrome, ordinary.	6	@	12
Green, Chrom's, pure.....	22	@	25
Lead, Eng., B.B. white....	8½@		10
Lead, Amn. White, dry or in oil:			
Kegs, lots less than 500 ℔...	7	@	7¼
Kegs, lots 500 ℔ to 5 tons....	6¾@		6¾
Kegs, lots 5 tons to 12 tons..	6¾@		6¾
Kegs, lots 12 tons and over..	6¼@		6½
Lead, White, in oil, 25 ℔ tin pails, add to keg price.....	..	@	⅛
Lead, White, in oil, 12½ ℔ tin pails, add to keg price.....	..	@	1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price.	..	@	2½
Lead, Red, bbls. and ½ bbls...	6	@	7
Lead, Red, kegs.....	6¼	@	7½
Litharge, kegs.....	6¼	@	7¼
Litharge, bbls. and ½ bbls.....	6	@	7

Terms, &c.—Lead and Litharge.—On lots of 500 ℔ or over, 60 days' time or 2½ % discount for cash if paid within 15 days of date of invoice.

Ocher, Rochelle.....	1.35	@	1½
Ocher, French Washed.....	1½@		2½
Ocher, German Washed....	1½@		3
Ocher, American.....	½@		1½
Orange Mineral, English....	8½@		9
Orange Mineral, French.....	10	@	10½
Orange Mineral, German....	8½@		9
Orange Mineral, American.	8½@		8¾
Paris White, English Cliff stone.....	1.00	@1.15	
Paris White, American.....	65	@	75
Red, Indian, English.....	5½@		7
Red, Indian, American.....	2	@	6½
Red, Turkey.....	9	@	14
Red, Tuscan.....	9	@	11
Red, Venetian, American... ₩ 100 ℔..	1.00	@1.10	
Red, Venetian, English.....1.20		@1.35	
Sienna, Italian, Burnt and Powd. ₩ ℔.....	4	@	5
Sienna, Ital., Burnt Lumps.	1½@		3½
Sienna, Ital., Raw, Powd...	4½@		5½
Sienna, Ital., Raw, Lumps..	1½@		3½
Sienna, American, Raw.....	1½@		1¾
Sienna, American, Burnt and Powdered..... ₩ ℔	1½@		1¾
Talc, French.....	1½@		1¾
Talc, American.....	1½@		1¾
Terra Alba, Fr'ch. ₩ 100 ℔	95	@1.25	
Terra Alba, English.....	70	@	80
Terra Alba, American No. 1	65	@	75
Terra Alba, American No. 2	45	@	50
Umber, Turkey, Burnt and Powdered..... ₩ ℔	3½@		4
Umber, Turkey Bnt. Ln....	2½@		3
Umber, Turkey, Raw and Powdered.....	3½@		....
Umber, Turkey, R'w Lumps	2½@		2¾
Umber, Turkey, Bnt. Amer..	1½@		1½
Umber, Turkey, R'w Amer.	1½@		1½
Yellow, Chrome.....	10	@	25
Vermillion, American Lead.	11½@		12
Vermillion, Quicks'er, bulk..	57	@	..
Vermillion, Quicks'er, bags..	58	@	..
Vermillion, Quicksilver sm'r pkgs.....	62	@	..
Vermillion, English Import.	85	@	90
Vermillion, Imitation, Eng..	8	@	35
Vermillion, Trieste.....	90	@	92½
Vermillion, Chinese.....	92½@		95
Whiting Common, ₩ 100 ℔	37½@		42½
Whiting Gliders'.....	45	@	55

Zinc, American, dry....₩ ℔	4½@		5
Zinc, French, Red Seal.....	7½@		.
Zinc, Frech, Green Seal	9	@	..
Zinc, Frech, V. M. X.....	..	@	7
Zinc, Antwerp, Red Seal....	7½@		..
Zinc, Antwerp, Green Seal..	7¾@		..
Zinc, German, L. Z. O.....	6½@		7¼
Zinc, V. M. in Poppy Oil, G. Seal, lots of 1 ton and over.....	10¾@		11¼
lots less than one ton.....	11	@	11¾
Zinc, V. M. in Poppy Oil, Red Seal.....	..	@	..
lots of 1 ton and over.....	10	@	10¼
lots of less than 1 ton....	10½@		10¾

Discounts.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1%; 25 bbls., 2%; 50 bbls. 4%. No discount allowed on less than bbl. lots.

Colors in Oil—

Black, Drop, Frankfort.....	25	@	30
Black, Drop, English.....	12	@	15
Black, Drop, Domestic.....	7	@	10
Black, Lampblack, Best....	20	@	25
Black, Lampblack, Common	7	@	15
Black, Ivory.....	8	@	15
Blue, Chinese.....	35	@	40
Blue, Prussian.....	20	@	45
Blue, Ultramarine.....	12	@	13
Brown, Vandyke.....	7	@	12
Green, Chrome.....	8	@	13
Green, Paris.....	16	@	18½
Sienna, Raw.....	7	@	14
Sienna, Burnt.....	7	@	14
Umber, Raw.....	7	@	10
Umber, Burnt.....	7	@	10

Putty—

In barrels and ⅛ bbls.....	.01½@		.01¾
In tubs.....	.01¾@		.01¾
In tin cans.....	.01¾@		.02¼
In bladders..	.01¾@		.03¼

Spirits Turpentine—

In regu bbls.....	30½@		....
In machine bbls.....	31	@	....

Clue—

Low Grade..... ₩ ℔	8	@	10
Cabinet.....	12	@	14
Medium White.....	13	@	15
Extra White.....	17	@	20
French.....	10	@	22
English.....	10	@	15
Irish.....	12	@	..

CURRENT METAL PRICES.

JANUARY 18, 1893.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from Store—

Common Iron:	
⅜ to 2 in. round and square.. 1 to 6 in. x ⅜ to 1 in....	₩ lb 1.90 @ 2.00¢
Refined Iron:	
⅜ to 2 in. round and square. 1 to 4 in. x ⅜ to 1½ in.... 4½ to 6 in. x ⅜ to 1 in.	₩ lb 2.00 @ 2.10¢
1 to 6 in. x ¼ and 5-16	₩ lb 2.20 @ 2.30¢
Rods—⅜ and 11-16 round and sq.	₩ lb 2.10 @ 2.20¢
Bands—1 to 6 x 3-16 to No. 12	₩ lb 2.30 @ 2.40¢
"Burden Best" Iron, base price.	₩ lb 3.00¢
Burden's "H. B. & S." Iron, base price	₩ lb 2.80¢
"Ulster"	₩ lb 3.00¢
Norway Bars	3.75 @ 4.00¢
Norway Shapes	4.50 @ 5.00¢

Merchant Steel from Store—

	Per lb
Open-Hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots	2¼¢
Best Cast Steel, base price in small lots	8 ¢
Best Cast Steel Machinery, base price in small lots	5 ¢

Sheet Iron from Store—

	Black—Common American.	Black—R. G. Cleaned American.
Nos. 10 to 16	₩ lb 2¾ @	3½¢
17 to 20	₩ lb 3 @	3½¢
21 to 24	₩ lb 3¼ @	3½¢
25 and 26	₩ lb 3⅜ @	3¾¢
27	₩ lb 3½ @	3⅞¢
28	₩ lb 3⅝ @	4 ¢
American B. B.	₩ lb 4¢ @ 4¼¢	

Galvanized Sheet Iron—

	B. B.
Nos. 10 to 16	₩ lb 4.20¢
17 to 22	₩ lb 4½¢
23 to 24	₩ lb 4¾¢
25 to 26	₩ lb 5 ¢
27	₩ lb 5¼¢
28	₩ lb 5½¢
29 to 30	₩ lb 6½¢
Genuine Russia, according to assortment	₩ lb 12¢ @ 13¢
Patent Planished	₩ lb A, 10¢; B, 9¢, 5%
Crag Polished Sheet Steel	₩ lb, 8½¢

English Steel from Store—

Best Cast	₩ lb 15 ¢
Extra Cast	₩ lb 16½ @ 17 ¢
Swaged, Cast	₩ lb 16 ¢
Best Double Shear	₩ lb 15 ¢
Blister, 1st quality	₩ lb 12 ¢
German Steel, Best	₩ lb 10 ¢
2d quality	₩ lb 9 ¢
3d quality	₩ lb 8 ¢
Sheet Cast Steel, 1st quality	₩ lb 15 ¢
2d quality	₩ lb 14 ¢
3d quality	₩ lb 12½¢
R. Mushet's "Special"	₩ lb 48 ¢
" " Annealed	₩ lb 75 ¢
" " "Titanic"	₩ lb 20 ¢

METALS—

Tin—

	Per lb
Banca, Pigs	22 ¢
Straits, Pigs	21½¢
Straits in Bars	23 ¢

Tin Plates—

Duty: 2.2¢ ₩ lb.

Charcoal Plates—Bright—

Guaranteed Plates command special prices, according to quality.

	Per box.
Melyn and Calland Grade. IC, 10 x14	@ $6.50
" " " IC, 12 x12	@ 6.75
" " " IC, 14 x20	@ 6.50
" " " IC, 20 x28	@ 13.00
" " " IX, 10 x14	@ 8.50
" " " IX, 12 x12	@ 8.75
" " " IX, 14 x20	@ 8.50
" " " IX, 20 x28	@ 17.00
" " " DC, 12½x17	@ 6.00
" " " DX 12½x17	@ 8.00
Allaway Grade. IC, 10 x14	@ 6.00
" " IC, 12 x12	@ 6.25
" " IC, 14 x20	@ 6.00
" " IC, 20 x28	@ 12.00
" " IX, 10 x14	@ 7.50
" " IX, 12 x12	@ 7.75
" " IX, 14 x20	@ 7.50
" " IX, 20 x28	@ 15.00
" " DC, 12½x17	@ 5.50
" " DX, 12½x17	@ 7.00

Coke Plates—Bright—

Steel Coke.—IC, 10 x 14, 14 x 20	@ $5.60
10 x 20	@ 8.50
20 x 28	@ 12.00
IX, 10 x 14, 14 x 20	@ 7.00
BV Grade.—IC, 10 x 14, 14 x 20	@ 5.60

Charcoal Plates—Terne—

Guaranteed Plates command special prices according to quality.

Dean Grade.—IC, 14 x 20	@ $5.75
20 x 28	@ 11.25
IX, 14 x 20	@ 6.50
20 x 28	@ 13.00
Abecarne Grade.—IC, 14 x 20	@ 5.65
20 x 28	@ 11.00
IX 14 x 20	@ 6 50
20 x 28	@ 13.00

Tin Boiler Plates—

XX, 4x 26 112 sheets	@ $13.35
IXX, 14 x 28 112 sheets	@ 14.50
IXX, 14 x 31 112 sheets	@ 16.00

American Terne Plates.—Apollo.

IC, 14 x 20	$6.25
IC, 20 x 28	12.50
IX, 14 x 20	7.25
IX, 20 x 28	14.50

Copper—

Duty: Pig, Bar and Ingot, 1¼¢; Old Copper, 1¢ ₩ lb. Manufactured (including all articles of which Copper is a component of chief value), 35 % ad valorem.

Ingot—

Lake	@ 13 ¢
Ansonia grade Arizona	@ 12½¢
Ansonia grade Casting	@ 12 ¢

Sheet and Bolt—

Prices adopted by the Association of Copper Manufacturers of the United States, May 19, 1892. Subject to a discount of 15 % @ 25 %, according to size of order.

Not wider than	Not longer than	And longer than	Weights per sq. foot and prices per pound. Over 64 oz.	32 to 64 oz.	16 to 32 oz.	14 to 16 oz.	12 to 14 oz.	10 to 12 oz.	8 to 10 oz.	Less than 8 oz.
30	72		22	23	23	23	24	25	28	30
30	72		22	23	23	23	25	27	31	....
36	96		22	23	23	24	26	30	33	....
36	96		22	23	23	25	27	31	35	...
48	96		22	23	24	26	28	32	....	....
48	96		22	23	25	27	29	33	....	....
60	96		22	23	27	29	34	....	....	....
60	96		22	23	28	....	....	....	....	....
84	96		23	24	....	....	....	....	....	....
84	96		24	25	....	....	....	....	....	....
Ov'r 84 in. wide			25	27	....	....	....	....	....	....

Bolt Copper, ⅝ inch diameter and over, per pound 22¢

Circles, Segments and Pattern Sheets, 60 in. diameter and less, 3¢ ₩ lb advance over prices of Sheet Copper required to cut them from.

Circles, Segments and Pattern Sheets, over 60 in. diameter, up to 96 in. diameter inclusive, 4¢ ₩ lb advance over prices of Sheet Copper required to cut them from.

Circles, Segments and Pattern Sheets, over 96 in. diameter, 5¢ ₩ lb advance over prices of Sheet Copper required to cut them from.

Cold or Hard Rolled Copper 14 oz. ₩ square foot and heavier, 1¢ ₩ lb over the foregoing prices.

Cold or Hard Rolled Copper lighter than 14 oz. ₩ square foot, 2¢ ₩ lb over the foregoing prices.

All Polished Copper over 20 in. wide, 2¢ ₩ lb advance over the foregoing prices.

Copper Bottoms, Pits and Flats—

	Per lb.
14 ounce to square foot and heavier	26¢
12 ounce and up to 14 ounce to square foot	27¢
10 ounce and up to 12 ounce	29¢
Lighter than 10 ounce	32¢

Circles less than 8 inches diameter, 2¢ ₩ lb additional.

Circles over 13 inches diameter are not classed as Copper Bottoms.

10 %@ 20 % discount, according to size of order.

Copper Wash Bowl Bottoms—

Tinned ₩ lb 34¢, 10% @ 20%

Tinning—

Net.

Tinning sheets on one side, 10, 12 and 14 x 48 each	8¢
Tinning sheets on one side, 30 x 60 each	30¢
For tinning boiler sizes, 9 in. (sheets 14 in. x 60 in.), each	15¢
For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each	12¢
For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.), each	12¢
Tinning sheets on one side, other sizes, per square foot	2½¢

For tinning both sides double the above prices.

Planished Brass and Copper—

Not larger than 30 x 60.

16 oz. and heavier	24¢ ₩ lb
14 oz.	25¢ ₩ lb
12 oz.	27¢ ₩ lb

Seamless Brass Tubes—

July 6, 1892. Net.

O. G.	N. G.	⅜	½	⅝	¾	⅞	1	1½
8-14	6-12	32	28	25	24	23	22	19
15	13	33	28	26	25	24	23	20
16	14	34	29	27	26	25	24	20
17	15	35	30	28	27	26	25	21
18	16	37	31	29	27	26	25	22
19	17	38	32	30	29	28	27	24
20	18-19	39	34	32	31	30	29	26
21	20	41	36	34	33	32	31	29
22	21	43	37	35	34	33	32	31
23	22	45	39	37	36	35	34	34
24	23	48	41	39	38	36	35	36
25	24	51	44	41	40	39	38	40

Copper, Bronze and Gilding Tube, 3¢ ₩ lb additional

Brazed Brass Tubing. (To No. 20 inclusive.)

Above 5-16 inch to 3 inch, inclusive	35¢
Plain, above 3 inch	45¢
Plain, 5-16 inch	45¢
Plain, ¼ inch	60¢
Plain, 3-16 inch	$1.00
Plain, ⅛ inch	$1.50
Fancy Tubing, Brass, to No. 20, inclusive	43¢ ₩ lb

Bronze Tubing, 3¢ ₩ lb more than Brass.

Discount from list 30 @ ..%

Roll and Sheet Brass—

(Brown & Sharpe Standard Gauge.)

Common High Brass: Wider than and including	in. 2 10	in. 10 12	in. 12 14	in. 14 16	in. 16 18	in. 18 20	in. 20 22	in. 22 24
To No. 20, inclusive	.21	.22	.23	.25	.27	.29	.31	.33
Nos. 21, 22, 23 and 24	.22	.23	.24	.26	.28	.30	.32	.34
Nos. 25 and 26	.22½	.23½	.24½	.27	.29	.31	.33	.35
Nos. 27 and 28	.23	.24	.25	.28	.30	.32	.34	.36

Common High Brass: Wider than and including	in. 2 10	in. 10 12	in. 12 14	in. 14 16	in. 16 18	in. 18 20	in. 20 22	in. 22 24
To No. 20, inclusive	.36	.39	.42	.46	.50	.55	.60	.65
Nos. 21, 22, 23 and 24	.37	.40	.43	.47	.51	.56	.61	.66
Nos. 25 and 26	.38	.41	.44	.48	.52	.57	.63	.71
Nos. 27 and 28	.39	.42	.45	.49	.53	.58	.65	.75

Discount from List 10 % to 25 %.

Brass and Copper Wire—

List January 17, 1884.

Numbered by Stubs' gauge.	Soft & hard high brass.	Spring high brass.	Low brass.	Copper.
All Nos. to No. 16, inclusive	$0.22	$0.24	$0.26	$0.30
No. 17 and No. 18	.23	.25	.27	.31
No. 19 and No. 20	.24	.26	.28	.32
No. 21, or 0.032 diameter	.25	.27	.29	.33

Discount 15 % to 25 %.

Fine Numbers.

Numbered by London gauge.	Brass.	Spring high brass.	Low brass.	Copper.
No. 22	$0.26	$0.28	$0.30	$0.34
No. 23	.28	.30	.32	.36
No. 24	.30	.32	.34	.38
No. 25	.32	.34	.36	.40
No. 26	.35	.37	.39	.43
No. 27	.38	.40	.42	.46
No. 28	.42	.44	.46	.51
No. 29	.45	.47	.49	.54
No. 30	.48	.50	.52	.57
No. 31	.51	.53	.55	.62
No. 32	.55	.57	.59	.68
No. 33	.59	.61	.63	.82
No. 34	.64	.66	.68	.96
No. 35	.70	.72	.74	1.30
No. 36	.76	.78	.80	1.50
No. 37	1.00	1.02	1.04	1.70
No. 38	1.30	1.32	1.34	2.00
No 39	2.00	2.02	00	3.50
No. 40	2.60	2.6	.60	5.75

— % discount.

Spring Wire, 2¢ ₩ lb advance.

Copper Belt and Hose Rivets and Burrs—

	Per lb.		Per lb.
No. 5	49¢	No. 11	56¢
No. 6	49¢	No. 12	58¢
No. 7	49¢	No. 13	60¢
No. 8	50¢	No. 14	65¢
No. 9	52¢	No. 15	70¢
No. 10	54¢		

60 % @ 5 % discount.

Tobin Bronze—Rods.

Drawn Rods for Bolts, Forgings, &c.

¼ to 3½ inches inclusive	17¢ ₩ lb
Over 3½ to 5 inches inclusive	18¢ ₩ lb

Piston Rods, Finished True, Smooth and Straight.

¼ to 3½ inches inclusive	18¢ ₩ lb
Over 3½ to 5 inches inclusive	19¢ ₩ lb

Spelter—

Duty: Pig, Bars and Plates, $1.50 ₩ 100 lb.

Western Spelter	5¼¢
Bertha (pure)	5¾¢

Zinc—

Duty: Sheet, 2½¢ ₩ lb.

600 lb casks	7 ¢
Per lb	7½¢

Lead—

Duty: Pig, $2 ₩ 100 lb. Old Lead, 2¢ ₩ lb. Pipe and Sheets, 2½¢ ₩ lb.

American Pig	4.5¢
Bar	4¾¢
Pipe, subject to discount 20%	6¼¢
Tin-Lined Pipe, subject to discount 20%	15¢
Block Tin Pipe, subject to discount 20%	37½¢
Sheet, subject to discount 20%	7¢

Old Lead in exchange, 3¼¢ ₩ lb.

Solder—

½ @ ½ (Guaranteed)	13½¢ @ 15¢
No. 1	11½¢ @ 12½¢

Prices of Solder indicated by private brands vary according to composition.

Antimony—

Cookson	₩ lb 12½¢
Hallett's	" 11 ¢

Aluminum—

Duty: 15¢ ₩ lb.

Guaranteed over 98½% pure	₩ lb .75
Guaranteed 94½@98½% pure	₩ lb .65
Lots under 100 lb	5¢ ₩ lb additional

Old Metals—

Prices Paid in New York.

Heavy Copper	₩ lb 10 ¢
Light and Tinned Copper	₩ lb 9 ¢
Heavy Brass	₩ lb 7 ¢
Light Brass	₩ lb 6 ¢
Lead	₩ lb 3½¢
Tea Lead	₩ lb 3½¢
Zinc	₩ lb 3½¢
No. 1 Pewter	₩ lb 14 ¢
No. 2 Pewter	₩ lb 7 ¢
Wrought Scrap Iron	₩ gross ton $17.00
Heavy Cast Scrap	₩ gross ton 10.00
Stove Plate Scrap	₩ gross ton 7.00
Burnt Iron	₩ gross ton 5.00